Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 774 1973 ADDITION

REVISION 0

April 14, 2004

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BUILDING 774 1973 ADDITION

REVISION 0

April 14, 2004

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EXECUTIVE SUMMARY

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of Rooms 241, 341, and 441 of Building 774 (referred to herein as the Building 774 1973 Addition). Because this Type 3 area will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS include interiors of Rooms 241, 341, 342, 441, and the south stairwell from Room 241 to 441. The remaining portions of Building 774 have been demolished and disposed of as radioactive waste.

The PDS encompassed both chemical and radiological characterization. The characterization was built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project.*

Based upon the results of this PDSR, the 774 1973 Addition meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan. These portions of Building 774 can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and PDS data remain valid, Level 2 isolation controls are established.

1 INTRODUCTION

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 774 1973 Addition. Because this Type 3 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). The results of this survey shall demonstrate that the Building 774 1973 Addition meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan. Building surfaces characterized as part of this PDS include interiors of Rooms 241, 341, 342, 344, 441, 442, and the south stairwell from Room 241 to 441.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Building 774. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 3 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for the Building 774. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.

1.1 PURPOSE

The purpose of this report is to communicate and document the results of the Building 774 PDS effort. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of a facility. The pre-demolition conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 SCOPE

This report presents the pre-demolition radiological and chemical conditions of the Building 774 1973 Addition surfaces that are located six feet above final grade and will be free-released and disposed of as sanitary waste or used as backfill per the requirements of the *RFETS, RFCA RSOP for Recycling Concrete.* The original Building 774 structure (including Rooms 202, 203, and 210), the Annex walls/roof, and a 380 ft^2 section of the east exterior wall of Room 241 will be packaged and disposed of as radioactive waste. Rooms 102 and 103 of Building 774, which are located six feet below the final proposed grade level, will remain *in-situ* and have been filled with a concrete aggregate. A PDS will not be performed for any of these areas.

The floors and lower walls of Room 241 which are six feet below final grade based on a gradient line between 3.5 feet above floor level on the north wall, and 11 feet above floor

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level on the south wall, will remain *in-situ* and are not included in the scope of this PDSP.

The plenums in Room 341 and 441 will be removed prior to demolition and disposed of as radioactive waste. Since these plenums were installed during building construction, and these areas were not radiological areas, the removal of the plenums will not change the radiological conditions of the rooms.

All areas that will packaged and disposed of as radioactive waste will be protected with fixative and verified to have removable levels less than 20 dpm per 100 cm^2 gross alpha activity. Contamination control measures to be used during demolition include water and fixative for dust suppression. In addition, demolition activities will be ceased when wind speeds exceed 15 mph. Close-in air sampling shall be used to ensure the safety of the worker and the public.

1.3 DATA QUALITY OBJECTIVES

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Section 2.0 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

1.3.1 The Problem

The problem involves determining whether or not the survey unit is suitable for unrestricted release in accordance with this plan.

1.3.2 The Decision

The decision is verification that objectives specified in the decommissioning decision document have been met (e.g., certain materials meet unrestricted release criteria for radiological and non-radiological constituents).

1.3.3 Inputs to the Decision

Inputs to the decision include the magnitude and location of data from preceding characterizations, including RLC and In-Process Characterization (IPC), PDS results, decision document action levels, and unrestricted release criteria.

1.3.4 Decision Boundaries

The decision boundaries are the spatial confines of the facility, including rooms and sets of rooms, in two and three dimensions. Interior and exterior surfaces are included, including those below grade. Boundaries may be further defined in RFCA decision documents.

1.3.5 Decision Rules

The following are decision rules to be used during PDS:

1.3.5.1 Radionuclides

If all radiological survey and scan measurements (and sample measurements, where sample activity is translated to surface activity as described in Kaiser-Hill letter to DOE, RFFO, Application of Surface Contamination Guidelines from Department of Energy Order 5400.5, WAH-064-98, March IO, 1998) are below the surface contamination guidelines provided in DOE Order 5400.5 (Radiation Protection of the Public and Environment; see Table 7-l), the related areas and/or volume are considered not radiological contaminated. The media sample result is calculated by converting volumetric activity (typically reported in pCi/g) to surface activity (dpm/100 cm^2). The volumetric result (pCi/g) is multiplied by the weight of the sample (grams) and by 2.22 (conversion from pCi to dpm).

If any radiological survey or scan measurement exceeds the surface contamination guidelines provided in DOE Order 5400.5, the related survey unit must be evaluated per the statistical tests described in section 7.0, Data Analysis and Quality Assessment, of this plan. If any radiological sample measurement (or disposal unit volume) exceeds 100 nanocuries per gram of transuranic material, the related volume of material is considered transuranic (TRU) waste.

1.3.5.2 Hazardous Waste

If decommissioning waste is mixed with or contains a listed hazardous waste, or if the waste exhibits a characteristic of a hazardous waste, then the waste is considered RCRA-regulated hazardous waste in accordance with 6 CCR 1007-3, Parts 261 and 268.

1.3.5.3 Hazardous Substances

If material contains a listed hazardous substance above a decision document action level (e.g., RFCA) and/or the CERCLA reportable quantity (40 CFR 302.4), the material is subject to CERCLA regulation (Le., redemption and/or notification requirements).

1.3.5.4 Beryllium

If surface concentrations of beryllium are equal to or greater than 0.2 µg/100 cm^2, the material is considered beryllium contaminated per 10 CFR 850.

1.3.5.5 PCBs

If material contains PCBs, in a non-liquid state, from the manufacturing process at concentrations 250 ppm, the material is considered PCB Bulk Product Waste and subject to the requirements of 40 CFR 761. If PCB contamination from a past spill/release is suspected, or if a PCB spill is discovered that has not been cleaned up, the associated material is considered PCB Remediation Waste and subject to the requirements of 40 CFR 761. PCB remediation waste includes: materials disposed of prior to April 18, 1978, that are currently at concentrations *250* ppm PCBs, regardless of the concentration of the original spill; materials which are currently at any volume or concentration where the original source was 2500 ppm PCBs beginning on April 18,1978, or 250 ppm PCBs beginning on July 2, 1979; and materials which are currently at any concentration if the

PCBs are spilled or released from a source not authorized for use under 40 CFR 761. If a waste or item contains PCBs in regulated concentrations, the waste or item is classified as PCB-regulated material and subject to the requirements of 40 CFR 761.

1.3.5.6 Asbestos

If any one sample of a sample set representing a homogeneous medium results in a positive detection (i.e., >1% by volume), then material is considered ACM (40 CFR 763 and 5 CCR 1001-10).

1.3.6 Tolerable Limits on Decision Error

Acceptable false negative *(a)* errors for calculating the number of samples generally range from 1% to 10%. The default value specified by the Site PDSP is 5%, which was assumed for the survey design in this report.

1.3.7 Optimization of Plan Design

Statistically based radiological surveying and sampling will be conducted per the guidance in Appendix B of the RFETS Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to Section 4.0 of the PDSP for direction of characterization of non-radiological, chemical constituents. For this report, the minimum number of measurement locations is fifteen per survey unit, as calculated based on the guidance in the MARSSIM. The $DCGL_W$ is 100 dpm/100 cm^2 for TSA and media measurements/samples, 20 dpm/100 cm^2 for RSA measurements. The LBGR was adjusted to obtain a relative shift of two. The estimated standard deviation for each measurement type was calculated based on an assumed coefficient of variation of 30%.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Hazards Characterization Report was conducted to understand the facility history and related hazards. The Building 771 Hazards Characterization was performed in June 2001 (Refer *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0). Based on the characterization results, radiological contamination was identified in Building 774, and Building 774 was identified as a Type 3 facility. Therefore, a PDS was required before demolition of the facility.

The area included in the scope of this PDSR is referred to herein as the Building 774 1973 Addition. This addition, constructed in 1973, is 54'wide 64'long X 54'high, and located south of the original building. This addition is three stories high with the bottom floor elevation the same as the floor of the second floor of the original building. The concrete tanks that were south of the building were removed as waste and the entrance to the valve vault for these tanks became the entrance to the new addition.

The first and second floors of the 1973 Addition Building, Room 241, housed four reagent tanks and four batching tanks for precipitation. Radioactive contamination was present in these tanks. The third floor (Rooms 341) housed a ventilation filter plenum

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that supported Building 774 glovebox operations. Radioactive contamination did exist in this plenum, though there is no record of any contamination events in Room 341 proper. The fourth floor (Room 441) housed a room air exhaust and recirculation plenum. Low levels of radioactive contamination was present in the plenum, though there is no record of any contamination event in Room 441 proper.

Rooms 341, 342, and 441 are classified as Class 2 survey units (771056, 771058, 771057, respectively) based on their contamination potential, per Section 3.0 of the PDSP. The entrance vestibules to rooms 341 and 441 (rooms 344 and 442) are included in these survey units.

Room 241 and the south stairwell (survey units 771054 and 771048, respectively) are classified as Class 1 based on their contamination potential, per Section 3.0 of the PDSP.

The original Building 774 structure (including Rooms 202, 203, and 210), the Annex walls/roof, and a 380 ft^2 section of the east exterior wall of Room 241 will be packaged and disposed of as radioactive waste. Rooms 102 and 103 of Building 774, which are located six feet below the final proposed grade level, will remain *in-situ* and have been filled with a concrete aggregate. A PDS will not be performed for any of these areas.

This report documents the results of that PDS. The hazards characterization results and historical review (refer to Attachment H) were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. Characterization documentation is located in the Building 771 Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The Building 774 1973 Addition was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern (weapons-grade plutonium isotopes). Based upon a review of the characterization data, historical and process knowledge, in-process survey data, building walk-downs, and the Site Pre-Demolition Survey Plan (MAN-127-PDSP), a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to survey packages 771048, 771054, 771056, 771057, and 771058). A Survey Unit Overview Map is presented in Attachment A. Based on hazard characterization data and historical and process knowledge, transuranic isotopes are the primary contaminants of concern in Buildings 771/774. Therefore, the PDS was performed to the transuranic PDS unrestricted release criteria. Individual radiological survey unit packages are maintained in the Building 771 Characterization Project files.

The Building 774 1973 Addition survey unit packages was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and media samples were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were

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implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control.*

Per the reference procedures, the required number of measurement locations is fifteen (15) per 100 square-meters of floor area for Class 1 survey units, and fifteen (15) per 1000 square meters of floor area for Class 2 survey units. Scans were required on 100% of surfaces for Class 1 survey units, and 100% of floors/lower walls and 10% of upper walls/ceiling for Class 2 survey units.

Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachments B, C, D, E, and F, *Radiological Data Summary and Survey Maps.*

Building 774 South Stairwell – (Survey Unit 771048)
The South Stairwell of Building 774 was classified as a Class 1 survey unit. The classification was based on the process history of the area (proximity of the stairwell to Room 241, an existing Class 1 survey unit). A total of 15 random TSA and RSA measurements, and 15 media samples were collected. Surface scans of 128m^2 (100% of total surface area) were performed.

All scans, surveys, and media sample results in survey unit 771048 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771048 are presented in Attachment B, *Survey Unit 771048 Radiological Data Summary and Survey Map.*

Building 774 Room 241 – (Survey Unit 771054)
Room 241 is classified as a Class 1 survey unit. The classification was based on the process history of the area, and the identification of alpha activity in excess of the $DCGL_W$ during characterization surveys/media sampling. Media sampling performed during the characterization phase identified elevated activity in surface media (paint) on the floors only (refer to the *B771 and B774 Hazards Characterization Report for the 771 Closure Project).* Because the floors are not included in the scope of this PDSR, paint removal was not required on the remaining surfaces.

Per the Building 771 Decommissioning Operations Plan (DOP), the floors and lower walls of Room 241 that will remain six feet below final grade (based on a gradient line between 3.5 feet above floor level on the north wall and 11 feet above floor level on the south wall) will remain *in-situ* and are not included in the scope of this PDSP. In addition, a 380 ft^2 section of the east exterior wall of Room 241 will be packaged and disposed of as radioactive waste (refer to Contact Record dated March 25, 2004).

A total of 42 random TSA and RSA measurements were collected, based on a floor surface area of 278 m^2. Surface scans of 1112 m^2 of the room surfaces (100% of total area) were also performed.

All paint has been removed from required areas (i.e., areas above the six feet below final grade line), with the exception of the ceiling, which is an original coating. Samples collected during RLC collaborate that the 241 ceiling is coated with original paint, given that no activity in excess of the applicable DCGLs was detected.

Four (4) conduit penetrations in the north wall of Room 241 were found to have elevated removable activity ranging from 21 to 54 dpm/100 cm^2. Fixative was applied to the interior surfaces and the penetrations will be removed and disposed of as radioactive waste.

All scans, surveys, and media sample results in survey unit 771054 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771054 are presented in Attachment C, *Survey Unit 771054 Radiological Data Summary and Survey Map.*

Building 774 Room 341 – (Survey Unit 771056)

Room 341 is classified as a Class 2 survey unit. The classification was based on the low potential for contamination based on process history and characterization results (all results less than the $DCGL_W$ of 100 dpm per 100 cm^2 – refer to the *B771 and B774 Hazards Characterization Report for the 771 Closure Project*). Surface scans of 407 m^2 (39% of total area) were also performed. A total of 15 random TSA and RSA measurements, and 15 media samples were collected.

All scans, surveys, and media sample results in survey unit 771056 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771056 are presented in Attachment D, *Survey Unit 771056 Radiological Data Summary and Survey Map.*

Building 774 Room 441 – (Survey Unit 771057)

The interior of room 441 is classified as a Class 2 survey unit. The classification was based on the low potential for contamination based on process history and characterization results (all results less than the $DCGL_W$ of 100 dpm per 100 cm^2 – refer to the *B771 and B774 Hazards Characterization Report for the 771 Closure Project*). Media sampling performed during the characterization phase identified elevated activity in surface media (paint) on the floors only (refer to the *B771 and B774 Hazards Characterization Report for the 771 Closure Project).*

A total of 15 random TSA and RSA measurements, and 17 media samples were collected. Surface scans of 387m^2 (33% of total area) were also performed. Seventeen (17) media samples were collected because the number of required locations was based on the total surface area of the room during RLC. Per the requirements of the PDSP, only fifteen (15) TSA/RSA locations were actually required (based on the floor surface area of the room).

All scans, surveys, and media sample results in survey unit 771057 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771057 are presented in Attachment E, *Survey Unit 771057 Radiological Data Summary and Survey Map.*

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Building 774 Room 342 – (Survey Unit 771058)

Room 342 was classified as a Class 2 survey unit. The classification was based on the low potential for contamination based on process history and characterization results (refer to the *B771 and B774 Hazards Characterization Report for the 771 Closure Project*). Media sampling performed during the characterization phase identified two spots of elevated activity in surface media (paint) on the floor at 156 dpm/100 cm^2 and 546 dpm/100 cm^2 (refer to the *B771 and B774 Hazards Characterization Report for the 771 Closure Project).* All other media sample locations, as well as TSA/RSA data, was less than the $DCGL_W$ of 100 dpm per 100 cm^2. Contamination on the floors is expected based on the process history of the room, which housed the upper portions of four tanks anchored onto the floor of Room 241. Therefore, paint removal was required on the floors in this room. A total of 15 random TSA and RSA measurements, and 15 media samples were collected. Surface scans of 108 m^2 (44% of the total surface area) were also performed.

All scans, surveys, and media sample results in survey unit 771058 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771058 are presented in Attachment F, *Survey Unit 771058 Radiological Data Summary and Survey Map.*

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Based on a thorough review of historical and process knowledge, visual inspections, and personnel interviews, no additional chemical hazard sampling requirements were identified.

4.1 Asbestos

Asbestos containing building material is not present in building 774.

4.2 Beryllium (Be)

Room 241 was posted/controlled as a Beryllium Regulated Area (BRA) during plasma-arc size reduction of the tanks. Therefore, per the Beryllium Sampling Decision Tree in the PDSP, twenty-one (21) random beryllium smear samples were collected from this room, in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999.

Rooms 341 and 441 of Building 774 are not and have never been a beryllium-controlled area. However, current beryllium data is not available for these areas. Therefore, per the Beryllium Sampling Decision Tree in the PDSP, six (6) biased beryllium smear samples were collected from each room, in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999.

All beryllium smear sample results were less than the investigative limit of 0.1 µg/100cm^2. PDS beryllium laboratory sample data and location maps are contained in Attachment I, *Chemical Data Summaries and Sample Maps.*

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4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based upon the *B771 and B774 Hazards Characterization Report, 771 Closure Project*, Revision 0, dated June 12, 2001, personnel interviews, facility walk-downs, and historical process knowledge (WSRIC/WEMS), Rooms 241, 341, and 441 of Building 774 did not contain hazardous waste storage units. A visual inspection of the building by 771/774 Industrial Hygiene personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling. As a result of these observances, it has been determined that no sampling for RCRA/CERCLA constituents is required. The concrete generated from the demolition of the areas included in the scope of this report can be used for onsite recycling in accordance with the Concrete Recycling RSOP.

4.4 Polychlorinated Biphenyls (PCBs)

Based on historical knowledge, personnel interviews, and 771/774 Environmental Compliance Personnel walk-downs, the Rooms 241, 341, and 441 of Building 774 never used/transferred free flowing/exposed PCB's. At one time the facility may have used PCB ballasts in its fluorescent light fixtures, however, all of these have been removed, and compliantly disposed of, resulting in no impact on demolition activities in this area.

Per the *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, PCBs are present in some applied paints (i.e., on several walls and floors within the B771 and B774 Contamination Areas, and within the 771/776 Tunnel). Because additional paint sampling was not performed in Rooms 241, 341, and 441, and because painted surfaces remain in the area, any painted debris generated during demolition that is not recycled on-site will be disposed of a PCB Bulk Product waste.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 774 are common to standard industrial environments, and include hazards associated with utilities. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration.

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 774 1973 Addition, and consequent waste management, is of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B, C, D, E and F) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are presented in Attachment G. The DQA Checklists are provided in the individual survey unit packages (located in the Building 771 Characterization Files).

The Minimum Detectable Activity (MDA) for each PDS instrument was determined *a priori* based on typical parameters (background, efficiency, and count time). A list of radiological field instrumentation and associated sensitivities is presented in Table 1.

Table 1
PDS Radiological Field Instrumentation and Minimum Detectable Activities

Model	Measurement Type	MDA (dpm/100 cm^2)
NE Electra DP6	TSA	48
Eberline SAC-4	Removable (Smears)	10
NE Electra AP6	Scans	300

7 DECOMMISSIONING WASTE TYPES

The demolition and disposal of Building 774 will generate a variety of wastes. Concrete can be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete.

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, the Building 774 1973 Addition is classified as an RFCA Type 3 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Based upon the results of this PDSR, the 774 1973 Addition meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan and is ready for demolition. The PDS for the Building 774 1973 Addition was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria.

A facility walkdown and historical review indicates that no RCRA/CERCLA constituents exist in the B774 Area (refer to Attachment H, Historical Review). Any painted debris generated during demolition that is not recycled on-site will be disposed of a PCB Bulk Product waste.

Radiological contamination in excess of the PDSP Table 7-1 limits was not detected in the Building 774 1973 Addition.

Based upon this PDSR, the described sections of Building 774 can be demolished and the waste managed as sanitary, and the concrete can be used for backfill on-site per the

RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and that PDS data remain valid, Level 2 isolation controls have been established.

9 REFERENCES

B771 and B774 Hazards Characterization Report for the 771 Closure Project, dated June 12, 2001, Revision 0.

DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

DOE Order 414.1A, *Quality Assurance*

EPA, 1994. *The Data Quality Objective Process*, EPA QA/G-4.

K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 2, March 10, 2003.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, *Asbestos Characterization Procedure*, Revision 0, August 24, 1999.

PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

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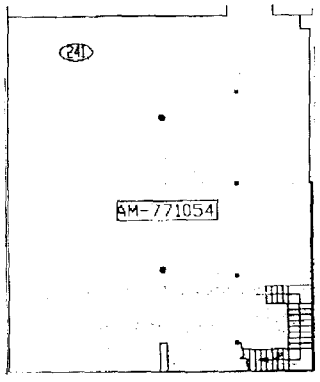
ATTACHMENT A

Survey Unit Overview Map



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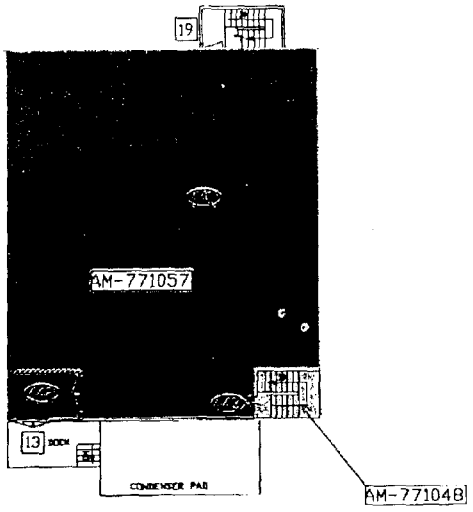

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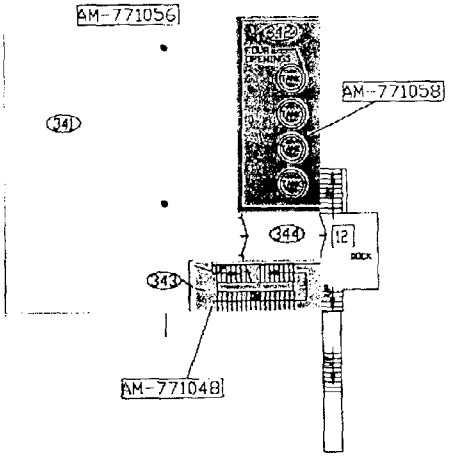

THIRD FLOOR

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ATTACHMENT B

Survey Unit 771048
Radiological Data Summary and Survey Map

Survey Area: AM	Survey Unit: 771048	Building: 774
Description: Rooms 343 and Room 443 (Stairwell)		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 15 Number Performed: 15 Number QC Performed: 2

Alpha - Random

Maximum:	41.0 dpm/100cm²
Minimum:	1.4 dpm/100cm²
Mean:	22.1 dpm/100cm²
Standard Deviation:	11.0
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

* Biased TSA and QC measurements not included in above statistics.

Removable Surface Activity Measurements

Number Required: 15 Number Performed: 15

Alpha - Random

Maximum:	6.1 dpm/100cm²
Minimum:	-0.9 dpm/100cm²
Mean:	1.6 dpm/100cm²
Standard Deviation:	2.1
Transuranic DCGLw:	20.0 dpm/100cm²

* Biased RSA measurements not included in above statistics.

Media Sample Results

Number Required: 15 Number Collected: 15

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000 dpm/100cm²
Uranium DCGLemc:	15,000 dpm/100cm²

Transuranic

Maximum:	75 dpm/100cm²
Minimum:	0 dpm/100cm²
Mean:	7 dpm/100cm²
Standard Deviation:	19
Transuranic DCGLw:	100 dpm/100cm²
Transuranic DCGLemc	300 dpm/100cm²

Survey Area: AM	Survey Unit: 771048	Building: 774

Description: Rooms 343 and Room 443 (Stairwell)

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	516572	03/27/04	Electra	1367	DP-6	06/17/04	0.220	NA	48.00	NA
2	702381	03/27/04	Electra	391	DP-6	08/20/04	0.221	NA	48.00	NA
3	516572	03/28/04	SAC-4	1185	NA	08/09/04	0.330	NA	10.00	NA
4	516572	03/28/04	SAC-4	1053	NA	07/22/04	0.330	NA	10.00	NA
5	516572	03/28/04	SAC-4	820	NA	08/18/04	0.330	NA	10.00	NA
6	516572	03/28/04	SAC-4	815	NA	08/09/04	0.330	NA	10.00	NA

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Survey Area: AM	Survey Unit: 771048	Building: 774

Description: Rooms 343 and Room 443 (Stairwell)

Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771048PRP-N001	3	-0.3	N/A
771048PRP-N002	3	1.2	N/A
771048PRP-N003	4	0.6	N/A
771048PRP-N004	6	-0.0	N/A
771048PRP-N005	5	1.5	N/A
771048PRP-N006	4	2.1	N/A
771048PRP-N007	5	-0.0	N/A
771048PRP-N008	5	-0.0	N/A
771048PRP-N009	6	-0.0	N/A
771048PRP-N010	5	4.5	N/A
771048PRP-N011	4	0.6	N/A
771048PRP-N012	4	-0.9	N/A
771048PRP-N013	5	6.1	N/A
771048PRP-N014	4	3.6	N/A
771048PRP-N015	3	4.2	N/A

Comments:

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Survey Area: AM	Survey Unit: 771048	Building: 774

Description: Rooms 343 and Room 443 (Stairwell)

Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771048QRP-N001	1	19.8	N/A	
771048PRP-N001	2	19.5	N/A	
771048PRP-N002	1	28.7	N/A	
771048QRP-N002	2	-13.4	N/A	
771048PRP-N003	1	22.8	N/A	
771048PRP-N004	1	26.0	N/A	
771048PRP-N005	2	37.6	N/A	
771048PRP-N006	2	1.4	N/A	
771048PRP-N007	1	19.6	N/A	
771048PRP-N008	2	7.7	N/A	
771048PRP-N009	2	22.6	N/A	
771048PRP-N010	2	10.4	N/A	
771048PRP N011	2	25.8	N/A	
771048PRP-N012	1	41.0	N/A	
771048PRP-N013	1	31.9	N/A	
771048PRP-N014	2	25.8	N/A	
771048PRP-N015	2	10.4	N/A	

Comments:

Survey Area: AM	Survey Unit: 771048	Building: 774

Description: Rooms 343 and Room 443 (Stairwell)

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
03Z2110-001.001 1	U234	NA	NA	5.93	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1280	0.1760			1	1	Transuranic
	Am241	0.0706	0.1050			1	1	2
03Z2110-002.001 2	U234	NA	NA	24.72	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1120	0.1980			4	6	Transuranic
	Am241	0.0656	0.1350			2	4	6
03Z2110-003.001 3	U234	NA	NA	29.04	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.1890			0	7	Transuranic
	Am241	0.0437	0.0805			2	3	2
03Z2110-004.001 4	U234	NA	NA	27.89	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.2580			0	9	Transuranic
	Am241	0.0499	0.0214			2	1	2
03Z2110-005.001 5	U234	NA	NA	18.53	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.7470	0.1900			18	5	Transuranic
	Am241	2.3400	0.0847			57	2	75
03Z2110-006.001 6	U234	NA	NA	21.68	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0578	0.2140			2	6	Transuranic
	Am241	0.0384	0.1180			1	3	3
03Z2110-007.001 7	U234	NA	NA	18.88	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.2170			0	5	Transuranic
	Am241	0.0147	0.0470			0	1	0

Comments:

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Survey Area: AM	Survey Unit: 771048	Building: 774

Description: Rooms 343 and Room 443 (Stairwell)

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in²)	Sample Nuclide (dpm/100cm²)	Sample Nuclide MDA (dpm/100cm²)	Sample Total (dpm/100cm²)
03Z2110-008.001 8	U234	NA	NA	10.18	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1990	0.2600			3	4	Transuranic
	Am241	0.1660	0.0723			2	1	5
03Z2110-009.001 9	U234	NA	NA	9.38	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0424	0.1730			1	2	Transuranic
	Am241	0.1160	0.0267			1	0	2
03Z2110-010.001 10	U234	NA	NA	5.06	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0612	0.1860			0	1	Transuranic
	Am241	0.3050	0.0712			2	1	2
03Z2110-011.001 11	U234	NA	NA	1.09	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0877	0.2630			0	0	Transuranic
	Am241	0.9330	0.0610			1	0	1
03Z2110-012.001 12	U234	NA	NA	1.20	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.4010	0.2000			1	0	Transuranic
	Am241	0.8920	0.0756			1	0	2
03Z2110-013.001 13	U234	NA	NA	1.04	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.3920	0.1480			1	0	Transuranic
	Am241	1.3400	0.0746			2	0	2
03Z2110-014.001 14	U234	NA	NA	28.50	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0168	0.2010			1	8	Transuranic
	Am241	0.0247	0.0787			1	3	2

Survey Area: AM	Survey Unit: 771048	Building: 774

Description: Rooms 343 and Room 443 (Stairwell)

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
03Z2110-015.001 15	U234	NA	NA	15.78	26.3	NA	NA	
Stairwell	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0205	0.1420			0	3	Transuranic
	Am241	0.0827	0.0226			2	1	2

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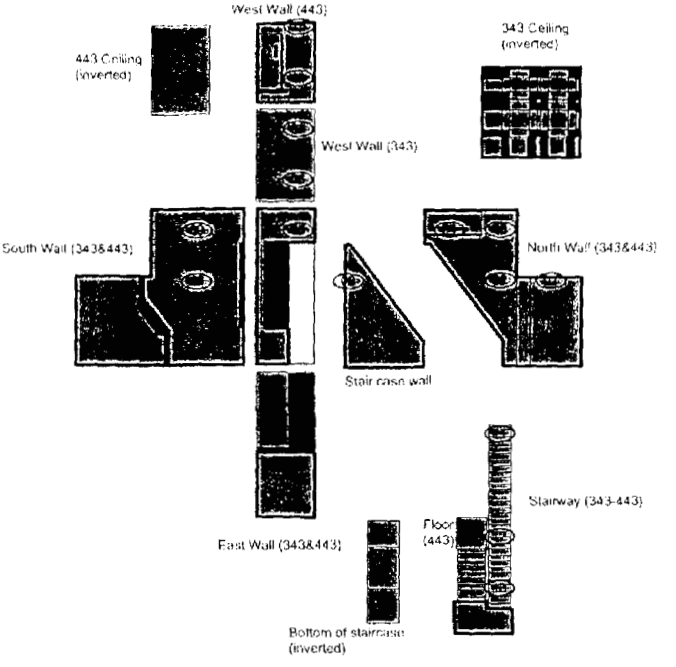
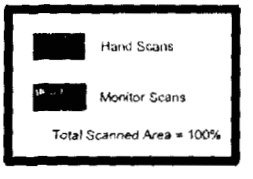
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

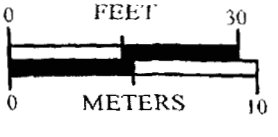
Survey Area: AM **Survey Unit: 771048** **Classification: 1**
Building: 774
Survey Unit Description: Room 343, 443

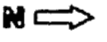
Total Floor Area: 19 sq. m Total Area: 128 sq. m Grid Size: 2m x 2m

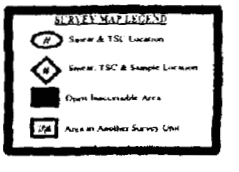
SURVEY UNIT 771048 - MAP 1 OF 1











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ATTACHMENT C

Survey Unit 771054
Radiological Data Summary and Survey Map

Survey Area: AM	Survey Unit: 771054	Building: 774

Description: Room 241 upper walls and ceiling (areas greater than 6 foot above final grade)

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 42 Number Performed: 42 Number QC Performed: 2

Alpha - Random

Maximum:	97.8 dpm/100cm²
Minimum:	-7.6 dpm/100cm²
Mean:	20.1 dpm/100cm²
Standard Deviation:	22.2
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

* Biased TSA and QC measurements not included in above statistics.

Removable Surface Activity Measurements

Number Required: 42 Number Performed: 42

Alpha - Random

Maximum:	5.2 dpm/100cm²
Minimum:	-1.5 dpm/100cm²
Mean:	0.5 dpm/100cm²
Standard Deviation:	1.7
Transuranic DCGLw:	20.0 dpm/100cm²

* Biased RSA measurements not included in above statistics.

Media Sample Results

Number Required: 0 Number Collected: 0

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000 dpm/100cm²
Uranium DCGLemc:	15,000 dpm/100cm²

Transuranic

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Transuranic DCGLw:	100 dpm/100cm²
Transuranic DCGLemc	300 dpm/100cm²

Survey Area: AM	Survey Unit: 771054	Building: 774

Description: Room 241 upper walls and ceiling (areas greater than 6 foot above final grade)

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	600586	03/28/04	Electra	392	DP-6	09/09/04	0.221	NA	48.00	NA
2	711798	03/28/04	Electra	2385	DP-6	06/03/04	0.219	NA	48.00	NA
3	600586	03/28/04	SAC-4	1185	NA	08/09/04	0.330	NA	10.00	NA
4	600586	03/28/04	SAC-4	1053	NA	07/22/04	0.330	NA	10.00	NA
5	600586	03/28/04	SAC-4	820	NA	08/18/04	0.330	NA	10.00	NA
6	600586	03/28/04	SAC-4	815	NA	08/09/04	0.330	NA	10.00	NA

Survey Area: AM	Survey Unit: 771054	Building: 774

Description: Room 241 upper walls and ceiling (areas greater than 6 foot above final grade)

Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771054PRP-N001	4	-0.9	N/A
771054PRP-N002	6	1.8	N/A
771054PRP-N003	3	-0.3	N/A
771054PRP-N004	5	-0.0	N/A
771054PRP-N005	5	-1.5	N/A
771054PRP-N006	5	-1.5	N/A
771054PRP-N007	3	4.2	N/A
771054PRP-N008	3	2.7	N/A
771054PRP-N009	6	1.8	N/A
771054PRP-N010	4	2.1	N/A
771054PRP-N011	5	0.0	N/A
771054PRP-N012	3	4.2	N/A
771054PRP-N013	5	1.5	N/A
771054PRP-N014	6	-1.2	N/A
771054PRP-N015	5	3.0	N/A
771054PRP-N016	4	-0.9	N/A
771054PRP-N017	6	0.3	N/A
771054PRP-N018	6	-1.2	N/A
771054PRP-N019	5	-1.5	N/A
771054PRP-N020	5	3.0	N/A
771054PRP-N021	4	0.6	N/A
771054PRP-N022	3	-0.3	N/A
771054PRP-N023	3	-0.3	N/A
771054PRP-N024	6	0.3	N/A
771054PRP-N025	6	0.3	N/A
771054PRP-N026	4	0.6	N/A
771054PRP-N027	5	-0.0	N/A
771054PRP-N028	3	-0.3	N/A
771054PRP-N029	4	-0.9	N/A
771054PRP-N030	4	-0.9	N/A

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Survey Area: AM	Survey Unit: 771054	Building: 774

Description: Room 241 upper walls and ceiling (areas greater than 6 foot above final grade)

Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771054PRP-N031	6	-1.2	N/A	
771054PRP-N032	3	-0.3	N/A	
771054PRP-N033	4	0.6	N/A	
771054PRP-N034	5	-1.5	N/A	
771054PRP-N035	3	-0.3	N/A	
771054PRP-N036	6	1.8	N/A	
771054PRP-N037	5	-1.5	N/A	
771054PRP-N038	5	-0.0	N/A	
771054PRP-N039	3	1.2	N/A	
771054PRP-N040	4	5.2	N/A	
771054PRP-N041	6	1.8	N/A	
771054PRP-N042	6	1.8	N/A	

Comments:

Survey Area: AM	Survey Unit: 771054	Building: 774

Description: Room 241 upper walls and ceiling (areas greater than 6 foot above final grade)

Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771054PRP-N001	1	7.3	N/A	
771054QRP-N001	2	51.6	N/A	
771054PRP-N002	1	4.1	N/A	
771054QRP-N002	2	15.1	N/A	
771054PRP-N003	1	-7.6	N/A	
771054PRP-N004	1	34.4	N/A	
771054PRP-N005	1	1.4	N/A	
771054PRP-N006	1	19.5	N/A	
771054PRP-N007	1	40.3	N/A	
771054PRP-N008	1	-7.6	N/A	
771054PRP-N009	1	7.3	N/A	
771054PRP-N010	1	10.5	N/A	
771054PRP-N011	2	20.0	N/A	
771054PRP-N012	2	38.3	N/A	
771054PRP-N013	2	-4.6	N/A	
771054PRP-N014	2	35.1	N/A	
771054PRP-N015	2	16.8	N/A	
771054PRP-N016	2	4.5	N/A	
771054PRP-N017	2	20.0	N/A	
771054PRP-N018	2	20.0	N/A	
771054PRP-N019	2	4.5	N/A	
771054PRP-N020	1	13.2	N/A	
771054PRP-N021	1	97.8	N/A	
771054PRP-N022	1	70.6	N/A	
771054PRP-N023	1	16.3	N/A	
771054PRP-N024	1	10.5	N/A	
771054PRP-N025	1	19.5	N/A	
771054PRP-N026	1	4.1	N/A	

Survey Area: AM	Survey Unit: 771054	Building: 774

Description: Room 241 upper walls and ceiling (areas greater than 6 foot above final grade)

Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771054PRP-N027	1	13.2	N/A	
771054PRP-N028	2	41.0	N/A	
771054PRP-N029	2	38.3	N/A	
771054PRP-N030	2	-4.6	N/A	
771054PRP-N031	2	41.0	N/A	
771054PRP-N032	2	4.5	N/A	
771054PRP-N033	2	74.8	N/A	
771054PRP-N034	1	25.4	N/A	
771054PRP-N035	1	4.1	N/A	
771054PRP-N036	1	10.5	N/A	
771054PRP-N037	1	4.1	N/A	
771054PRP-N038	1	34.4	N/A	
771054PRP-N039	1	4.1	N/A	
771054PRP-N040	1	7.3	N/A	
771054PRP-N041	1	25.4	N/A	
771054PRP-N042	1	22.2	N/A	

Comments:

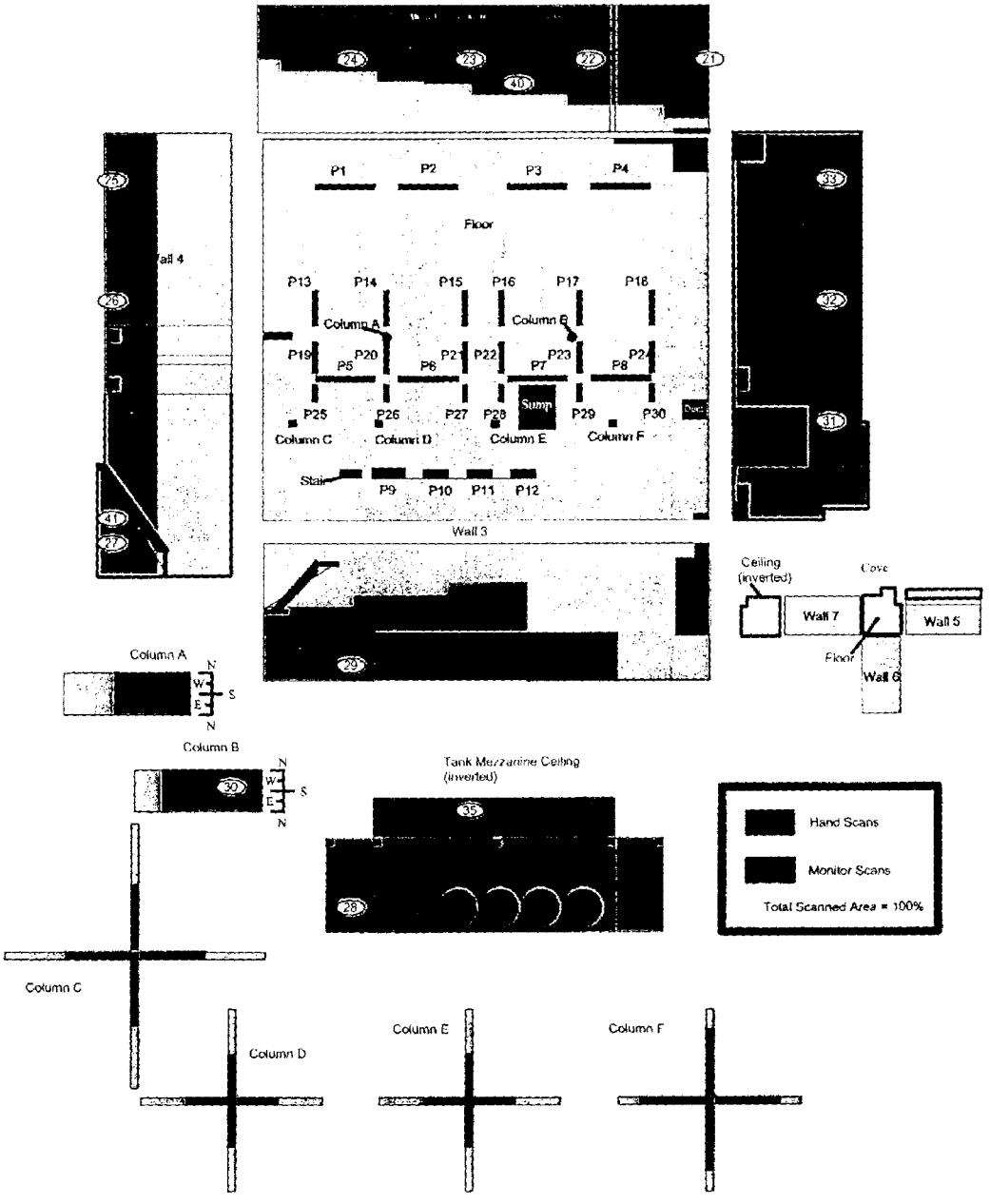
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AM Survey Unit: 771054 Classification: 1
Building: 774
Survey Unit Description: Room 241

Total Floor Area: 278 sq. m Total Area: 1112 sq. m Grid Size: 5m x 5m

SURVEY UNIT 771054 - MAP 1 OF 2

Room 241



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N

SURVEY MAP LEGEND

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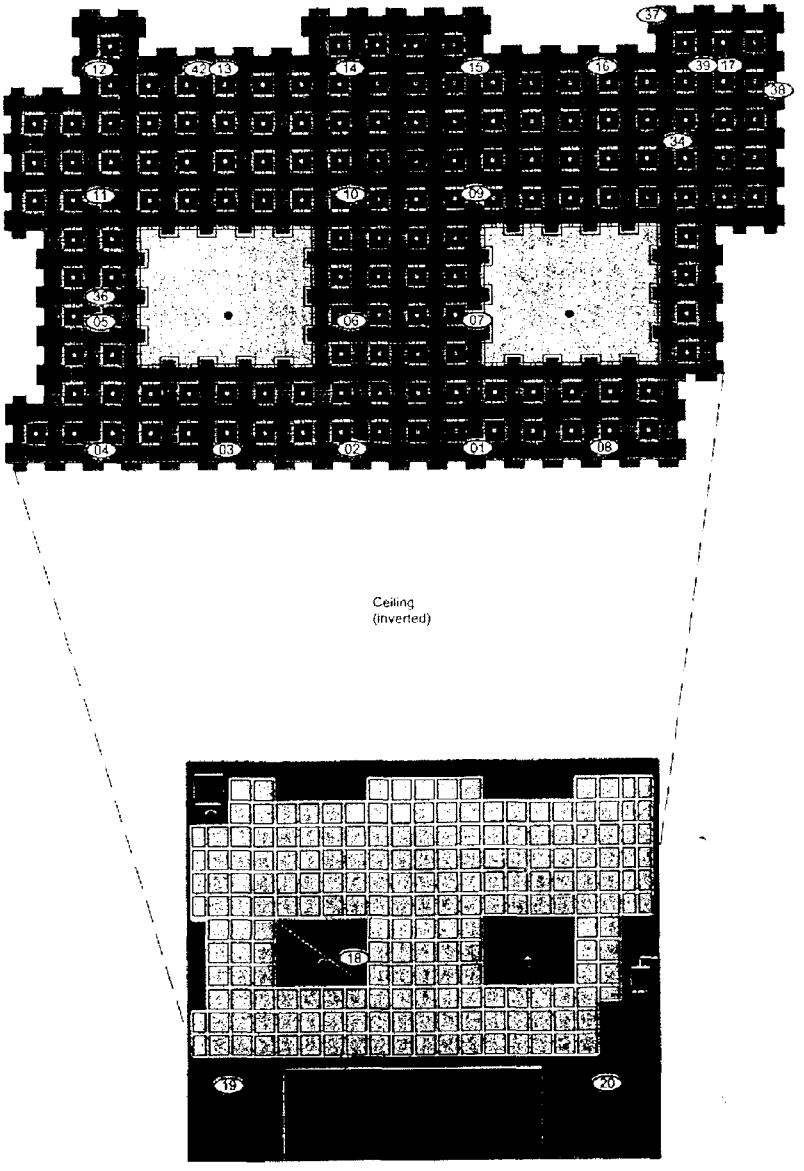
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AM **Survey Unit: 771054** **Classification: 1**
Building: 774
Survey Unit Description: Room 241

Total Floor Area: 278 sq. m Total Area: 1182 sq. m Grid Size: 5m x 5m

SURVEY UNIT 771054 - MAP 2 OF 2



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ATTACHMENT D

Survey Unit 771056
Radiological Data Summary and Survey Map

Survey Area: AM	Survey Unit: 771056	Building: 774

Description: Room 341 and 344.

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 15 Number Performed: 15 Number QC Performed: 2

Alpha - Random

Maximum:	27.4 dpm/100cm²
Minimum:	-14.2 dpm/100cm²
Mean:	8.6 dpm/100cm²
Standard Deviation:	10.9
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

* Biased TSA and QC measurements not included in above statistics.

Removable Surface Activity Measurements

Number Required: 15 Number Performed: 15

Alpha - Random

Maximum:	2.1 dpm/100cm²
Minimum:	-1.8 dpm/100cm²
Mean:	0.4 dpm/100cm²
Standard Deviation:	1.2
Transuranic DCGLw:	20.0 dpm/100cm²

* Biased RSA measurements not included in above statistics.

Media Sample Results

Number Required: 15 Number Collected: 15

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000 dpm/100cm²
Uranium DCGLemc:	15,000 dpm/100cm²

Transuranic

Maximum:	33 dpm/100cm²
Minimum:	0 dpm/100cm²
Mean:	5 dpm/100cm²
Standard Deviation:	8
Transuranic DCGLw:	100 dpm/100cm²
Transuranic DCGLemc	300 dpm/100cm²

Survey Area: AM	Survey Unit: 771056	Building: 774

Description: Room 341 and 344.

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
4	711451	03/20/04	SAC-4	1053	NA	07/22/04	0.330	NA	10.00	NA
5	711451	03/20/04	SAC-4	820	NA	08/18/04	0.330	NA	10.00	NA
6	711451	03/20/04	SAC-4	1185	NA	08/09/04	0.330	NA	10.00	NA
7	711451	03/20/04	Electra	2380	DP-6	08/18/04	0.210	NA	48.00	NA
8	711449	03/20/04	Electra	2372	DP-6	09/01/04	0.218	NA	48.00	NA

Survey Area: AM	Survey Unit: 771056	Building: 774

Description: Room 341 and 344.

Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771056PRP-N001	4	-0.9	N/A
771056PRP-N002	5	-0.3	N/A
771056PRP-N003	6	-1.8	N/A
771056PRP-N004	4	-0.9	N/A
771056PRP-N005	5	-0.3	N/A
771056PRP-N006	6	1.2	N/A
771056PRP-N007	4	0.6	N/A
771056PRP-N008	5	-1.8	N/A
771056PRP-N009	6	-0.3	N/A
771056PRP-N010	4	2.1	N/A
771056PRP-N011	5	-0.3	N/A
771056PRP-N012	6	-1.8	N/A
771056PRP-N013	4	0.6	N/A
771056PRP-N014	5	-0.3	N/A
771056PRP-N015	6	1.8	N/A

Comments:

Survey Area: AM	Survey Unit: 771056	Building: 774

Description: Room 341 and 344

Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771056PRP-N001	7	21.2	N/A
771056QRP-N001	7	12.9	N/A
771056PRP-N002	7	8.4	N/A
771056QRP-N002	8	14.8	N/A
771056PRP-N003	7	2.2	N/A
771056PRP-N004	7	5.0	N/A
771056PRP-N005	7	-4.5	N/A
771056PRP-N006	7	8.4	N/A
771056PRP-N007	7	24.1	N/A
771056PRP-N008	7	27.4	N/A
771056PRP-N009	7	2.2	N/A
771056PRP-N010	8	10.5	N/A
771056PRP-N011	7	5.0	N/A
771056PRP-N012	8	-14.2	N/A
771056PRP-N013	7	11.7	N/A
771056PRP-N014	8	4.1	N/A
771056PRP-N015	7	17.9	N/A

Comments:

Survey Area: AM	Survey Unit: 771056	Building: 774

Description: Room 341 and 344

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0008-001.001 1	U234	NA	NA	1.85	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0570	0.0770			0	0	Transuranic
	Am241	0.0310	0.0850			0	0	0
01N0008-002.001 2	U234	NA	NA	6.57	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1080	0.1460			1	1	Transuranic
	Am241	0.0590	0.0800			1	1	1
01N0008-003.001 3	U234	NA	NA	4.29	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.1230			0	1	Transuranic
	Am241	0.1080	0.1440			1	1	1
01N0008-004.001 4	U234	NA	NA	2.63	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0780	0.1750			0	1	Transuranic
	Am241	0.1060	0.1410			0	1	1
01N0008-005.001 5	U234	NA	NA	13.79	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1870	0.1470			3	3	Transuranic
	Am241	0.3250	0.0800			6	1	9
01N0008-006.001 6	U234	NA	NA	7.85	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2210	0.1230			2	1	Transuranic
	Am241	0.5970	0.2120			6	2	8
01N0008-007.001 7	U234	NA	NA	3.84	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.3180	0.1570			2	1	Transuranic
	Am241	6.2800	0.0810			32	0	33

Comments:

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Survey Area: AM	Survey Unit: 771056	Building: 774

Description: Room 341 and 344.

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in²)	Sample Nuclide (dpm/100cm²)	Sample Nuclide MDA (dpm/100cm²)	Sample Total (dpm/100cm²)
01N0008-008.001 8 Room 341	U234	NA	NA	1.20	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1130	0.1530			0	0	Transuranic
	Am241	0.6040	0.0860			1	0	1
01N0008-009.001 9 Room 341	U234	NA	NA	16.33	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0140	0.1130			0	2	Transuranic
	Am241	0.0680	0.0920			2	2	2
01N0008-010.001 10 Room 341	U234	NA	NA	11.93	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.1730			0	3	Transuranic
	Am241	0.0500	0.1500			1	2	1
01N0008-011.001 11 Room 341	U234	NA	NA	8.09	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0160	0.1240			0	1	Transuranic
	Am241	0.0970	0.1790			1	2	1
01N0008-012.001 12 Room 341	U234	NA	NA	11.16	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1280	0.1680			2	3	Transuranic
	Am241	0.3940	0.1620			6	2	8
01N0008-013.001 13 Room 341	U234	NA	NA	5.18	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1720	0.1570			1	1	Transuranic
	Am241	0.4660	0.0970			3	1	4
01N0008-014.001 14 Room 341	U234	NA	NA	3.06	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0270	0.0720			0	0	Transuranic
	Am241	0.4060	0.2380			2	1	2

Survey Area: AM .	Survey Unit: 771056	Building: 774

Description: Room 341 and 344

Media Samples Data Sheet

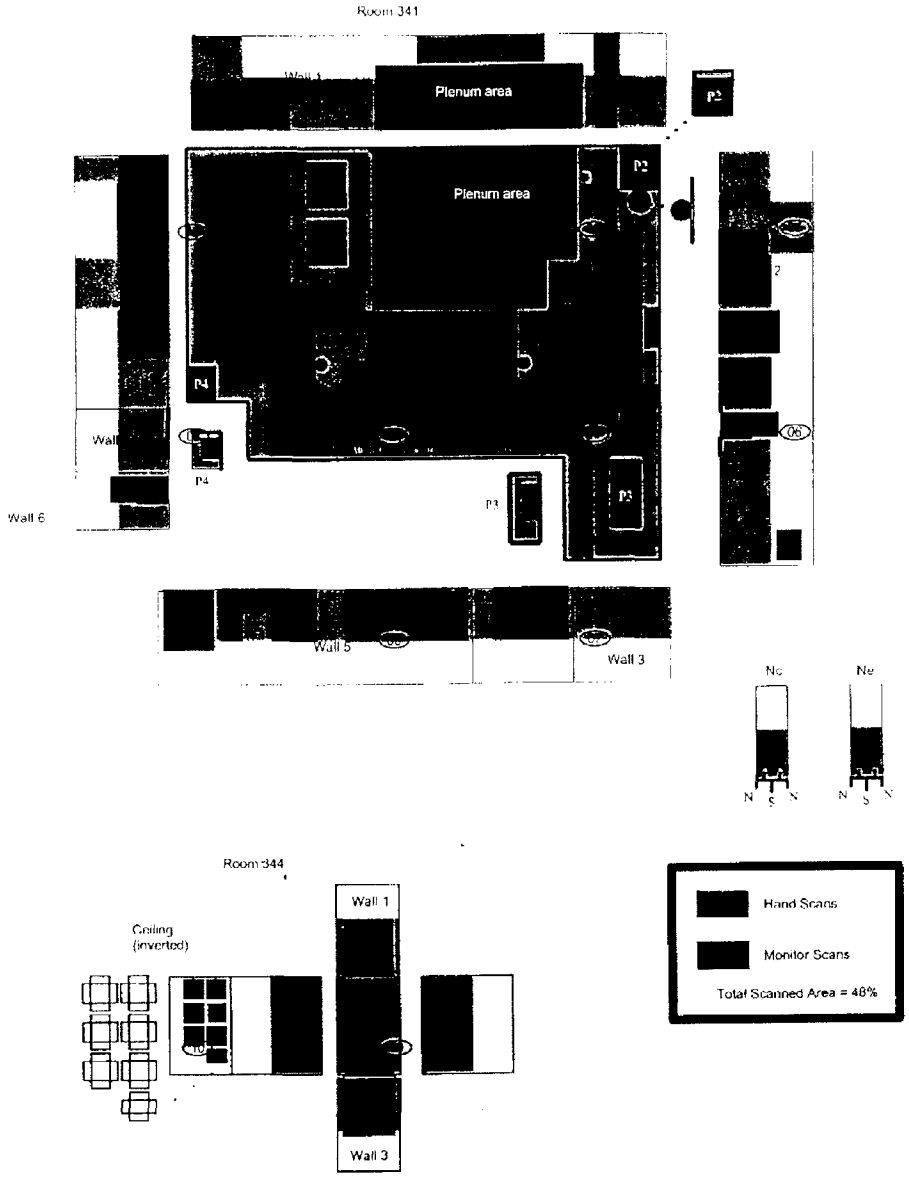
Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0008-015.001 15	U234	NA	NA	2.70	26.3	NA	NA	
Room 341	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1060	0.1760			0	1	Transuranic
	Am241	0.4890	0.0830			2	0	2

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AM **Survey Unit: 771056** **Classification: 2**
Building: 774
Survey Unit Description: Room 341, 344

Total Floor Area: 194 sq. m **Total Area: 1034 sq. m** **Grid Size: 8m x 8m**

SURVEY UNIT 771056 - MAP 1 OF 2



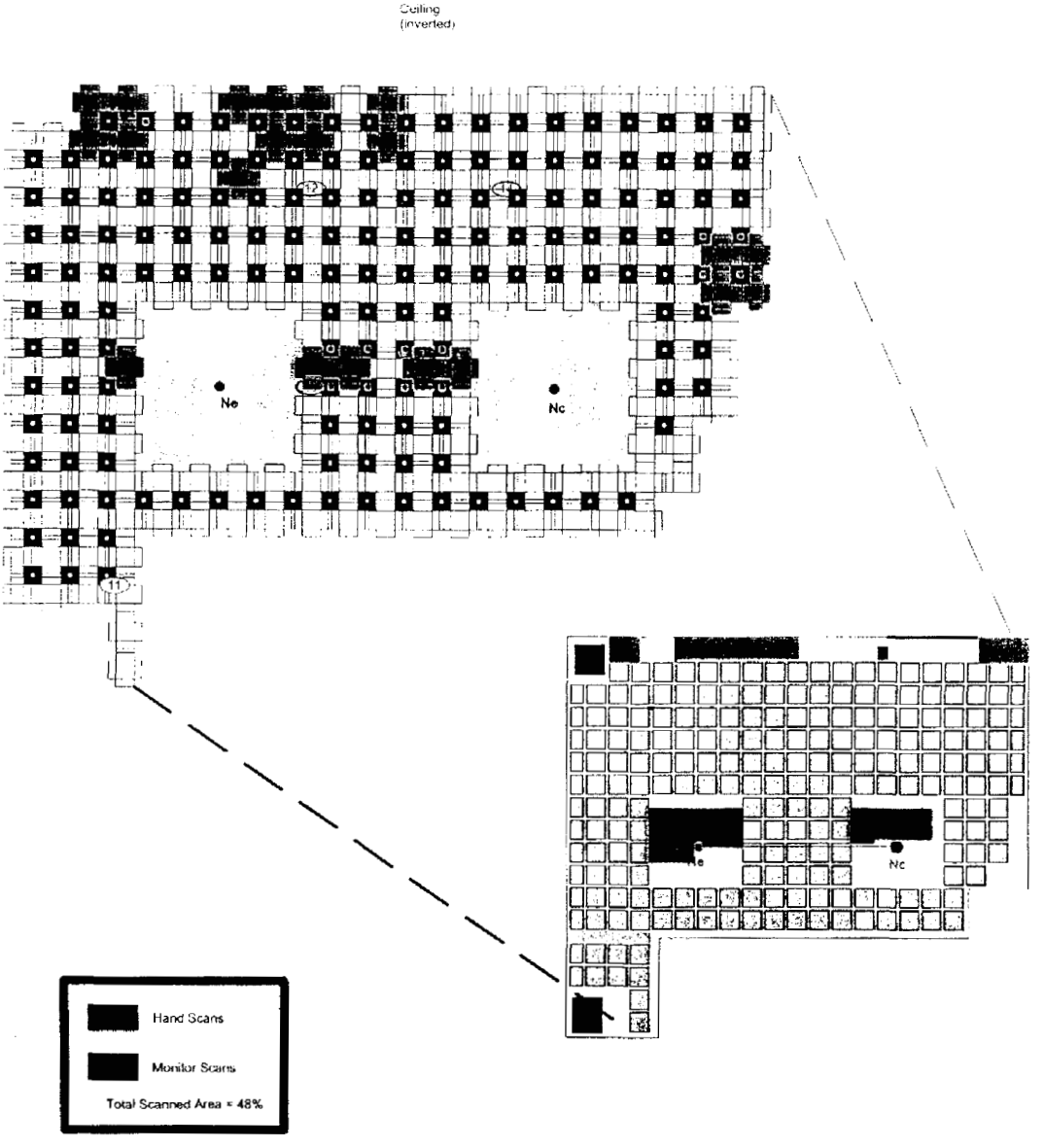
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AM **Survey Unit: 771056** **Classification: 2**
Building: 774
Survey Unit Description: Room 341, 342

Total Floor Area: 194 sq. m **Total Area: 1034 sq. m** **Grid Size: 8m x 8m**

SURVEY UNIT 771056 - MAP 2 OF 2

Room 341



ATTACHMENT E

Survey Unit 771057
Radiological Data Summary and Survey Map

Survey Area: AM	Survey Unit: 771057	Building: 774

Description: Room 441 and 442.

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 15 Number Performed: 15 Number QC Performed: 2

Alpha - Random

Maximum:	22.1 dpm/100cm²
Minimum:	-11.2 dpm/100cm²
Mean:	8.7 dpm/100cm²
Standard Deviation:	10.2
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

* Biased TSA and QC measurements not included in above statistics.

Removable Surface Activity Measurements

Number Required: 15 Number Performed: 15

Alpha - Random

Maximum:	3.6 dpm/100cm²
Minimum:	-1.5 dpm/100cm²
Mean:	0.0 dpm/100cm²
Standard Deviation:	1.5
Transuranic DCGLw:	20.0 dpm/100cm²

* Biased RSA measurements not included in above statistics.

Media Sample Results

Number Required: 17 Number Collected: 17

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000 dpm/100cm²
Uranium DCGLemc:	15,000 dpm/100cm²

Transuranic

Maximum:	17 dpm/100cm²
Minimum:	0 dpm/100cm²
Mean:	7 dpm/100cm²
Standard Deviation:	5
Transuranic DCGLw:	100 dpm/100cm²
Transuranic DCGLemc	300 dpm/100cm²

Survey Area: AM	Survey Unit: 771057	Building: 774

Description: Room 441 and 442.

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
8	513699	03/19/04	Electra	2372	DP-6	09/01/04	0.218	NA	48.00	NA
9	711451	03/19/04	Electra	296	DP-6	07/29/04	0.209	NA	48.00	NA
10	515878	03/19/04	SAC-4	1053	NA	07/22/04	0.330	NA	10.00	NA
11	515878	03/19/04	SAC-4	820	NA	08/18/04	0.330	NA	10.00	NA
12	515878	03/19/04	SAC-4	815	NA	08/09/04	0.330	NA	10.00	NA
88	513699	03/19/04	Electra	2372	DP-6	09/01/04	0.218	NA	48.00	NA
99	711451	03/19/04	Electra	296	DP-6	07/29/04	0.209	NA	48.00	NA

Survey Area: AM	Survey Unit: 771057	Building: 774

Description: Room 441 and 442.

Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771057PRP-N001	10	2.1	N/A
771057PRP-N002	12	0.3	N/A
771057PRP-N003	10	3.6	N/A
771057PRP-N004	11	-1.5	N/A
771057PRP-N005	12	0.3	N/A
771057PRP-N006	10	-0.9	N/A
771057PRP-N007	11	-0.0	N/A
771057PRP-N008	12	-1.2	N/A
771057PRP-N009	10	-0.9	N/A
771057PRP-N010	11	-1.5	N/A
771057PRP-N011	12	-1.2	N/A
771057PRP-N012	11	-0.0	N/A
771057PRP-N013	10	2.1	N/A
771057PRP-N014	11	-0.0	N/A
771057PRP-N015	12	-1.2	N/A

Comments:

51

Survey Area: AM	Survey Unit: 771057	Building: 774

Description: Room 441 and 442.

Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771057PRP-N001	8	18.9	N/A
771057PRP-N002	8	22.1	N/A
771057PRP-N003	8	-2.7	N/A
771057PRP-N004	8	15.7	N/A
771057PRP-N005	8	3.8	N/A
771057QRP N005	9	0.1	N/A
771057PRP N006	8	12.9	N/A
771057PRP-N007	9	5.1	N/A
771057PRP-N008	9	-7.8	N/A
771057PRP-N009	9	20.9	N/A
771057QRP-N010	8	-0.1	N/A
771057PRP-N010	9	-11.2	N/A
771057PRP-N011	9	14.7	N/A
771057PRP-N012	8	9.7	N/A
771057PRP-N013	9	14.7	N/A
771057PRP-N014	9	11.3	N/A
771057PRP-N015	9	1.7	N/A

Comments:

52

Survey Area: AM	Survey Unit: 771057	Building: 774

Description: Room 441 and 442.

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0009-001.001 1 441	U234	NA	NA	25.35	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0580	0.1490			2	5	Transuranic
	Am241	0.1730	0.0780			6	3	8
01N0009-002.001 2 441	U234	NA	NA	7.89	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1510	0.1640			2	2	Transuranic
	Am241	0.3460	0.1560			4	2	5
01N0009-003.001 3 441	U234	NA	NA	4.14	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0230	0.1850			0	1	Transuranic
	Am241	0.1250	0.0850			1	1	1
01N0009-004.001 4 441	U234	NA	NA	2.35	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	1.0300	0.0930			3	0	Transuranic
	Am241	2.3800	0.2350			7	1	11
01N0009-005.001 5 441	U234	NA	NA	7.40	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1320	0.1430			1	1	Transuranic
	Am241	0.4160	0.0700			4	1	5
01N0009-006.001 6 441	U234	NA	NA	3.62	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0460	0.1360			0	1	Transuranic
	Am241	0.2520	0.0850			1	0	1
01N0009-007.001 7 441	U234	NA	NA	2.46	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	1.0800	0.0730			4	0	Transuranic
	Am241	4.3100	0.0940			14	0	17

Comments:

Survey Area: AM	Survey Unit: 771057	Building: 774

Description: Room 441 and 442.

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide (dpm/100cm^2)	Sample Nuclide MDA (dpm/100cm^2)	Sample Total (dpm/100cm^2)
01N0009-008.001 8	U234	NA	NA	1.81	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.9650	0.0670			2	0	Transuranic
	Am241	3.4400	0.1540			8	0	10
01N0009-009.001 9	U234	NA	NA	6.53	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1350	0.0730			1	1	Transuranic
	Am241	1.0800	0.0810			9	1	10
01N0009-010.001 10	U234	NA	NA	7.61	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0300	0.1410			0	1	Transuranic
	Am241	0.0000	0.0950			0	1	0
01N0009-011.001 11	U234	NA	NA	33.72	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.1790			0	8	Transuranic
	Am241	0.0760	0.1410			3	6	3
01N0009-012.001 12	U234	NA	NA	15.87	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0820	0.1440			2	3	Transuranic
	Am241	0.3120	0.1560			7	3	8
01N0009-013.001 13	U234	NA	NA	25.26	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0100	0.1780			0	6	Transuranic
	Am241	0.3320	0.0900			11	3	11
01N0009-014.001 14	U234	NA	NA	2.91	26.3	NA	NA	
441	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1760	0.0790			1	0	Transuranic
	Am241	0.1380	0.0750			1	0	1

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Survey Area: AM	**Survey Unit:** 771057	**Building:** 774

Description: Room 441 and 442.

Media Samples Data Sheet

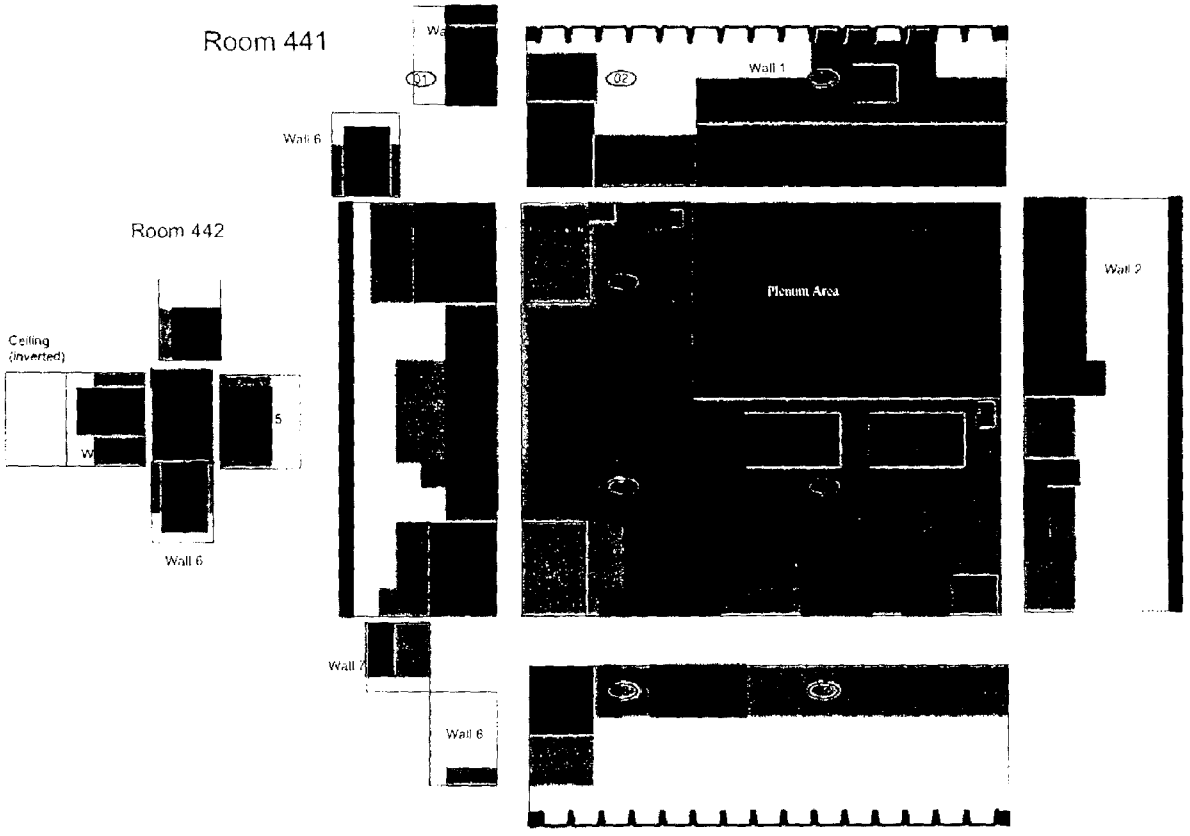
Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0009-015.001 15 441	U234	NA	NA	11.25	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1050	0.1400			2	2	Transuranic
	Am241	0.4730	0.0850			7	1	9
01N0009-016.001 16 441	U234	NA	NA	6.13	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2050	0.1490			2	1	Transuranic
	Am241	0.3340	0.1010			3	1	4
01N0009-017.001 17 441	U234	NA	NA	11.61	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.3290	0.0690			5	1	Transuranic
	Am241	0.5460	0.1410			8	2	13

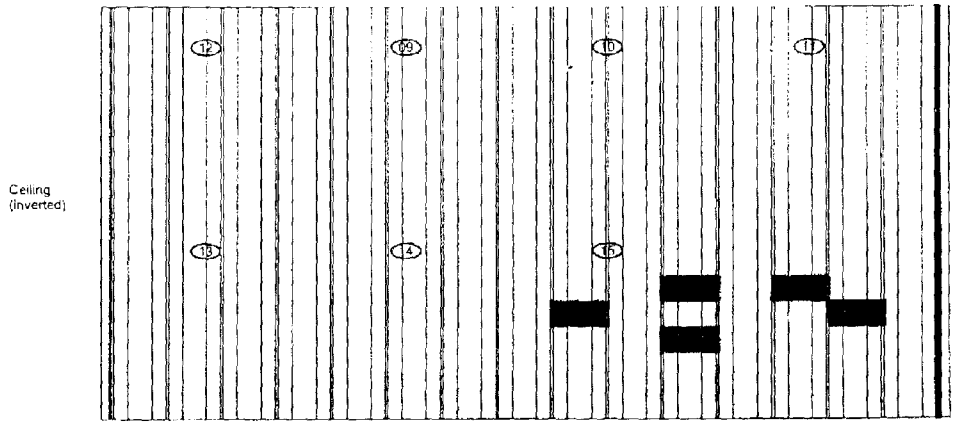
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

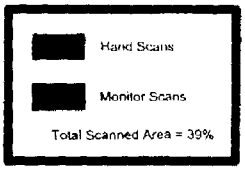
Survey Area: AM **Survey Unit: 771057** **Classification: 2**
Building: 774
Survey Unit Description: 774 Room 441, 443

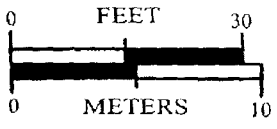
Total Floor Area: 186 sq. m Total Area: 1169 sq. m Grid Size: 8m x 8m

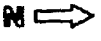
SURVEY UNIT 771057 - MAP 1 OF 1

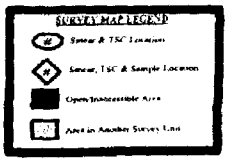












ATTACHMENT F

Survey Unit 771058
Radiological Data Summary and Survey Map

Survey Area: AM	Survey Unit: 771058	Building: 774
Description: Room 342		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 15 Number Performed: 15 Number QC Performed: 2

Alpha - Random

Maximum:	85.6 dpm/100cm²
Minimum:	-28.9 dpm/100cm²
Mean:	14.4 dpm/100cm²
Standard Deviation:	25.0
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

* Biased TSA and QC measurements not included in above statistics

Removable Surface Activity Measurements

Number Required: 15 Number Performed: 15

Alpha - Random

Maximum:	4.3 dpm/100cm²
Minimum:	-1.5 dpm/100cm²
Mean:	0.8 dpm/100cm²
Standard Deviation:	1.7
Transuranic DCGLw:	20.0 dpm/100cm²

* Biased RSA measurements not included in above statistics.

Media Sample Results

Number Required: 15 Number Collected: 15

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000 dpm/100cm²
Uranium DCGLemc:	15,000 dpm/100cm²

Transuranic

Maximum:	12 dpm/100cm²
Minimum:	0 dpm/100cm²
Mean:	5 dpm/100cm²
Standard Deviation:	4
Transuranic DCGLw:	100 dpm/100cm²
Transuranic DCGLemc	300 dpm/100cm²

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Survey Area: AM	Survey Unit: 771058	Building: 774

Description: Room 342

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	600586	03/28/04	Electra	392	DP-6	09/09/04	0.221	NA	48.00	NA
2	600586	03/28/04	Electra	2382	DP-6	07/09/04	0.220	NA	48.00	NA
3	711798	03/28/04	Electra	2385	DP-6	06/03/04	0.219	NA	48.00	NA
4	600586	03/28/04	SAC-4	1185	NA	08/09/04	0.330	NA	10.00	NA
5	600586	03/28/04	SAC-4	1053	NA	07/22/04	0.330	NA	10.00	NA
6	600586	03/28/04	SAC 4	820	NA	08/18/04	0.330	NA	10.00	NA
7	600586	03/28/04	SAC-4	815	NA	08/09/04	0.330	NA	10.00	NA
15	516572	04/07/04	Electra	394	DP-6	06/26/04	0.226	NA	48.00	NA
16	516572	04/07/04	SAC-4	820	NA	08/18/04	0.330	NA	10.00	NA

Survey Area: AM	Survey Unit: 771058	Building: 774

Description: Room 342

Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771058PRP-N001	4	-0.3	N/A
771058PRP-N002	4	4.2	N/A
771058PRP-N003	16	-0.3	N/A
771058PRP-N004	6	-1.5	N/A
771058PRP-N005	6	-0.0	N/A
771058PRP-N006	7	1.8	N/A
771058PRP-N007	4	1.2	N/A
771058PRP-N008	5	2.1	N/A
771058PRP-N009	7	1.8	N/A
771058PRP-N010	5	2.1	N/A
771058PRP-N011	5	0.6	N/A
771058PRP-N012	6	-0.0	N/A
771058PRP-N013	5	-0.9	N/A
771058PRP-N014	6	-1.5	N/A
771058PRP-N015	4	2.7	N/A

Comments:

Survey Area: AM	Survey Unit: 771058	Building: 774

Description: Room 342

Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771058PRP-N001	1	13.2	N/A
771058QRP-N001	3	-4.8	N/A
771058PRP-N002	1	-1.8	N/A
771058QRP-N002	3	-4.8	N/A
771058PRP-N003	15	15.1	N/A
771058PRP-N004	1	85.5	N/A
771058PRP-N005	1	31.3	N/A
771058PRP-N006	1	-4.9	N/A
771058PRP-N007	1	1.4	N/A
771058PRP-N008	2	-28.9	N/A
771058PRP-N009	1	1.4	N/A
771058PRP-N010	1	13.2	N/A
771058PRP-N011	1	4.1	N/A
771058PRP-N012	1	22.2	N/A
771058PRP-N013	1	13.2	N/A
771058PRP-N014	1	16.3	N/A
771058PRP-N015	1	34.4	N/A

Comments:

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Survey Area: AM	Survey Unit: 771058	Building: 774

Description: Room 342

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in²)	Sample Nuclide (dpm/100cm²)	Sample Nuclide MDA (dpm/100cm²)	Sample Total (dpm/100cm²)
01N0023-001.001 1	U234	NA	NA	10.28	26.3	NA	NA	
West Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0040	0.0330			0	0	Transuranic
	Am241	0.5350	0.1540			7	2	7
01N0023-002.001 2	U234	NA	NA	7.09	26.3	NA	NA	
West Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0050	0.1670			0	2	Transuranic
	Am241	0.0920	0.0830			1	1	1
01N0023-003.001 3	U234	NA	NA	3.35	26.3	NA	NA	
West Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0330	0.1760			0	1	Transuranic
	Am241	0.1830	0.0820			1	0	1
04Z0383-001.001 4	U234	NA	NA	7.81	26.3	NA	NA	
South Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0850	0.1160			1	1	Transuranic
	Am241	0.2430	0.2080			3	2	3
04Z0383-002.001 5	U234	NA	NA	5.19	26.3	NA	NA	
North Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.5200	0.2820			4	2	Transuranic
	Am241	0.1750	0.1190			1	1	5
04Z0383-003.001 6	U234	NA	NA	17.90	26.3	NA	NA	
North Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	0.3130			0	7	Transuranic
	Am241	0.3310	0.1120			8	3	8
01N0023-007.001 7	U234	NA	NA	8.15	26.3	NA	NA	
East Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.3720	0.0840			4	1	Transuranic
	Am241	0.3830	0.1580			4	2	8

Comments: Samples 4, 5, and 6 replace samples originally taken for RLC on the floor that were above the DCGLw. The media on the floor and lower walls will be removed.

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Survey Area: AM | **Survey Unit:** 771058 | **Building:** 774

Description: Room 342

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0023-008.001 8	U234	NA	NA	7.70	26.3	NA	NA	
East Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.9490	0.0950			10	1	Transuranic
	Am241	0.2580	0.0780			3	1	12
01N0023-009.001 9	U234	NA	NA	7.56	26.3	NA	NA	
East Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.4960	0.0840			5	1	Transuranic
	Am241	0.4090	0.2190			4	2	9
01N0023-010.001 10	U234	NA	NA	6.32	26.3	NA	NA	
East Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0320	0.0860			0	1	Transuranic
	Am241	0.1530	0.0830			1	1	2
01N0023-011.001 11	U234	NA	NA	8.65	26.3	NA	NA	
East Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2410	0.1730			3	2	Transuranic
	Am241	0.1240	0.1650			1	2	4
01N0023-012.001 12	U234	NA	NA	6.65	26.3	NA	NA	
East Wall	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1710	0.1460			2	1	Transuranic
	Am241	0.1820	0.0990			2	1	3
01N0023-013.001 13	U234	NA	NA	2.51	26.3	NA	NA	
Ceiling	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0900	0.0810			0	0	Transuranic
	Am241	0.0300	0.0800			0	0	0
01N0023-014.001 14	U234	NA	NA	10.63	26.3	NA	NA	
Ceiling	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1440	0.0780			2	1	Transuranic
	Am241	0.4030	0.0840			6	1	8

Survey Area: AM	Survey Unit: 771058	Building: 774

Description: Room 342

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0023-004.001 15 Ceiling	U234	NA	NA	6.84	26.3	NA	NA	
	U235	NA	NA			NA	NA	*Uranium*
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1060	0.1420			1	1	*Transuranic*
	Am241	0.0300	0.0820			0	1	1

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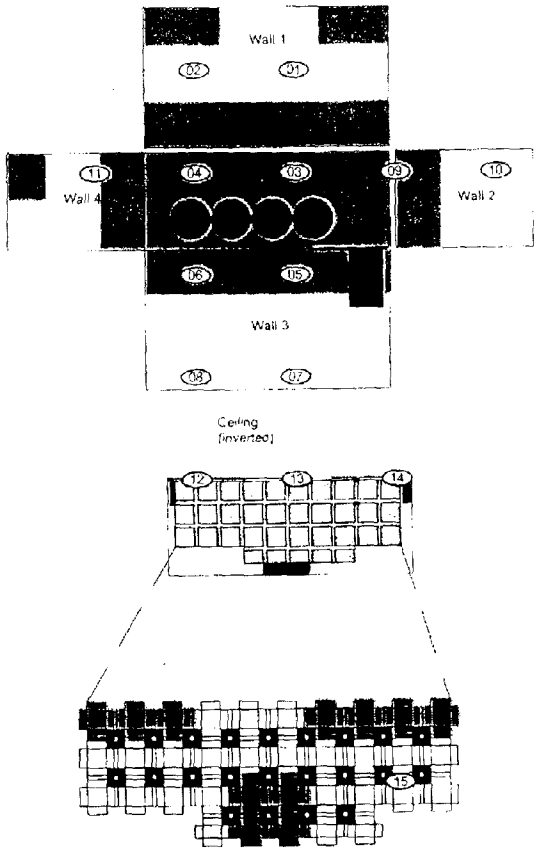
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

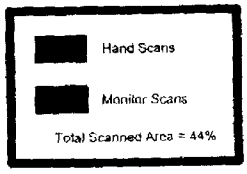
Survey Area: AM **Survey Unit: 771058** **Classification: 2**
Building: 774
Survey Unit Description: Room 342

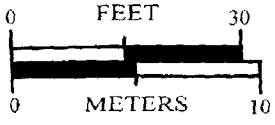
Total Floor Area: 31 sq. m **Total Area: 245 sq. m** **Grid Size: 4m x 4m**

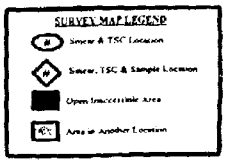
SURVEY UNIT 771058 - MAP 1 OF 1

Room 342









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ATTACHMENT G

Data Quality Assessment

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed; the radiological survey assessment is provided in Table E-1, and beryllium in E-2. A data completeness summary for all results is given in Table E-3.

All relevant Quality records supporting this report are maintained in the B774 Interior Characterization Project Files. This report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2).

SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable uncertainties.

Based upon an independent review of the radiological data it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels, except as noted above. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been implemented to prevent the inadvertent introduction of further contamination into the facility. On this basis, the B774 Interior meets the RLCP and PDSP DQO criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – B774 Interior

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	initial calibrations	80%<x<120%	≥1	Calibration using Alpha Group procedure and approved technicians.
	daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected Ranges <10 Cpm
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥100% packages	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 771058/771057/771056/771054/771048	statistical	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ DCGL$_w$ per MARSSIM guidelines.

Table E-2 V&V of Beryllium Results – B774 Interior

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Corp. Denver, Co.	
QUALITY REQUIREMENTS		RIN ---->	RIN 774-03-03-2004-76-121 thru 143 RIN 774-04-07-2004-76-101 thru 112 and 113B thru 114B	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e., classification of Type 3 facilities confirmed. All results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	interference check std (ICP)	NA	NA	
PRECISION	Laboratory Control Sample Duplicate	80%<%R<120% (RPD<20%)	≥1	
	field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	detection limits	MDL of 0.10ug/100cm^2	all measures	

Table E-3 Data Completeness Summary – B774 Interior					
ANALYTE	**Building/Area /Unit**	**Sample Number Planned (Real & QC)[A]**	**Sample Number Taken (Real & QC)**	**Project Decisions (Conclusions) & Uncertainty**	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	B774 Interior	32 biased (interior) 4 Blanks	32 biased (interior) 4 Blanks	No beryllium contamination found at any location, all results below the regulatory limit	OSHA ID-125G RIN 774-03-03-2004-76-121 thru 143 RIN 774-04-07-2004-76-101 thru 114 No results above action level ($0.2 ug/100cm^2$) or investigative level ($0.1 ug/100cm^2$).
Radiological	Survey Area: AM Survey Unit: 771058 B774 Room 342	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 15 Media 44% exterior scanned	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 15 Media 44% exterior scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample numbers: 01N0023-001.001 Thru 01N0023-004.001, 04Z0383-001.001 Thru 04Z0383-003.001, 01N0023-007.001 Thru 01N0023-014.001 No results above action level
Radiological	Survey Area: AM Survey Unit: 771057 B774 Room 441	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA	15 α RSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA	No elevated contamination at any location from DOE added isotope; all values below PDS unrestricted release levels No results above action	Transuranic DCGLs RIN Sample numbers: 01N0009-001.001 Thru 01N0009-017.001 No results above action level

Table E-3 Data Completeness Summary – B774 Interior

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
		17 Media 33% Scanned	17 Media 33% Scanned	level	
Radiological	Survey Area: AM Survey Unit: 771056 B774 Room 341	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 15 Media 39% Scanned	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 15 Media 39% Scanned	No elevated contamination at any location from DOE added isotope; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample numbers: 01N0008-001.001 Thru 01N0008-015.001 No results above action level
Radiological	Survey Area: AM Survey Unit: 771054 B774 Room 241	42 α TSA (42 – Random/Systematic) and 42 α Smears (42 - Random/Systematic) 2 QC TSA 26 Media 100% Scanned	42 α TSA (42 – Random/Systematic) and 42 α Smears (42 - Random/Systematic) 2 QC TSA 26 Media 100% Scanned	No elevated contamination at any location from DOE added isotope; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample numbers: 01N0007-001.001, 01N0007-003.001 Thru 01N0007-006.001, 01N0007-008.001, 01N0007-011.001 Thru 01N0007-016.001, 03Z2172-001.001, 03Z1949-003.001 Thru 03Z1949-015.001 No results above action level

Table E-3 Data Completeness Summary – B774 Interior					
ANALYTE	**Building/Area /Unit**	**Sample Number Planned (Real & QC)[A]**	**Sample Number Taken (Real & QC)**	**Project Decisions (Conclusions) & Uncertainty**	**Comments (RIN, Analytical Method, Qualifications, etc.)**
Radiological	Survey Area: AM Survey Unit: 771048 B774 Stairwell	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 15 Media 100% Scanned	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 15 Media 100% Scanned	No elevated contamination at any location from DOE added isotope; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample numbers: 03Z2110-001.001 Thru 03Z2110-0015.001 No results above action level

ATTACHMENT H

Historical Review

Building 774 Interior
Historical Review
April 14, 2004

Facility ID: Buildings 774, Interior (Survey Area AM)

Anticipated Facility Type (1, 2, or 3): Type 3.

Physical Description: The interior of the 774 Building encompasses approximately 3786m^2. The primary material used in its construction is painted poured concrete with intermittent use of painted cinder block.

Historical Operations:
This survey unit consists of structural surfaces only. The Building 774 Addition, built in 1973, was known as the plenum building because of the 2 plenums that supplied and filtered air for the rooms and the glove boxes/vent hoods for B774. These plenums are located in rooms 441 and 341. Room 342 had 4 vertical tanks where various solutions were loaded for operations. Rooms 441, 341 and 342 were not posted/controlled as a Contamination Area/Airborne Radioactivity Area during operations. Room 241 and the South Stairwell were controlled as process areas because they housed reagent and precipitation tanks.

Current Operational Status: Building 774 is no longer in operation.

Contaminants of Concern

Asbestos
None

Beryllium (Be)
The interior of Rooms 341 and 441 have never been posted/controlled as a Beryllium (Be) Area, based on historical and existing classifications and historical use. Personnel interviews confirm that these rooms were never Beryllium areas. Room 241 was controlled as a Beryllium Regulated Area (BRA) during plasma arc size reduction of the tanks in the room. All areas have since been de-posted from BCA/BRA.

Lead

None

RCRA/CERCLA Constituents
Personnel interviews indicate that RCRA storage units were never located in this area.

A visual inspection of the 774 interior 771774 Environmental Compliance/Industrial Hygiene personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling. As a result of these observances, it has been determined that no additional sampling for RCRA/CERCLA constituents is required.

PCBs
Free-flowing or exposed PCBs have never been used or transferred on the interior of 774.

Radiological Contaminants
The contaminants of concern for the 771 project, including all areas of Buildings 771 and 774, are transuranic alpha-emitting radioisotopes (including Pu-238, Pu-239/240, Pu-242, and Am-241). Based on findings documented in Radiological Engineering TBD-00161, Rev. 0, alpha-only surveys assure that the unrestricted-release limits for any other isotopes that may exist in Building 771/774 will not be exceeded.

Environmental Restoration Concerns
No Individual Hazardous Substance Sites (IHSS) exist beneath the Building 774 1973 Addition.

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Building 774 Interior
Historical Review
April 14, 2004

Additional Information
None

References
(1) B771 and B774 Hazards Characterization Report for the 771 Closure Project, dated June 12, 2001, Revision 0.
(2) Building 771/774 Cluster Closure Project Reconnaissance Level Characterization Report, dated August 8, 1998, Revision 2.

Further Actions
Complete the PDS process.

Prepared By: T. Fontaine / [signature] / 4-14-04
Name Signature Date

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ATTACHMENT I

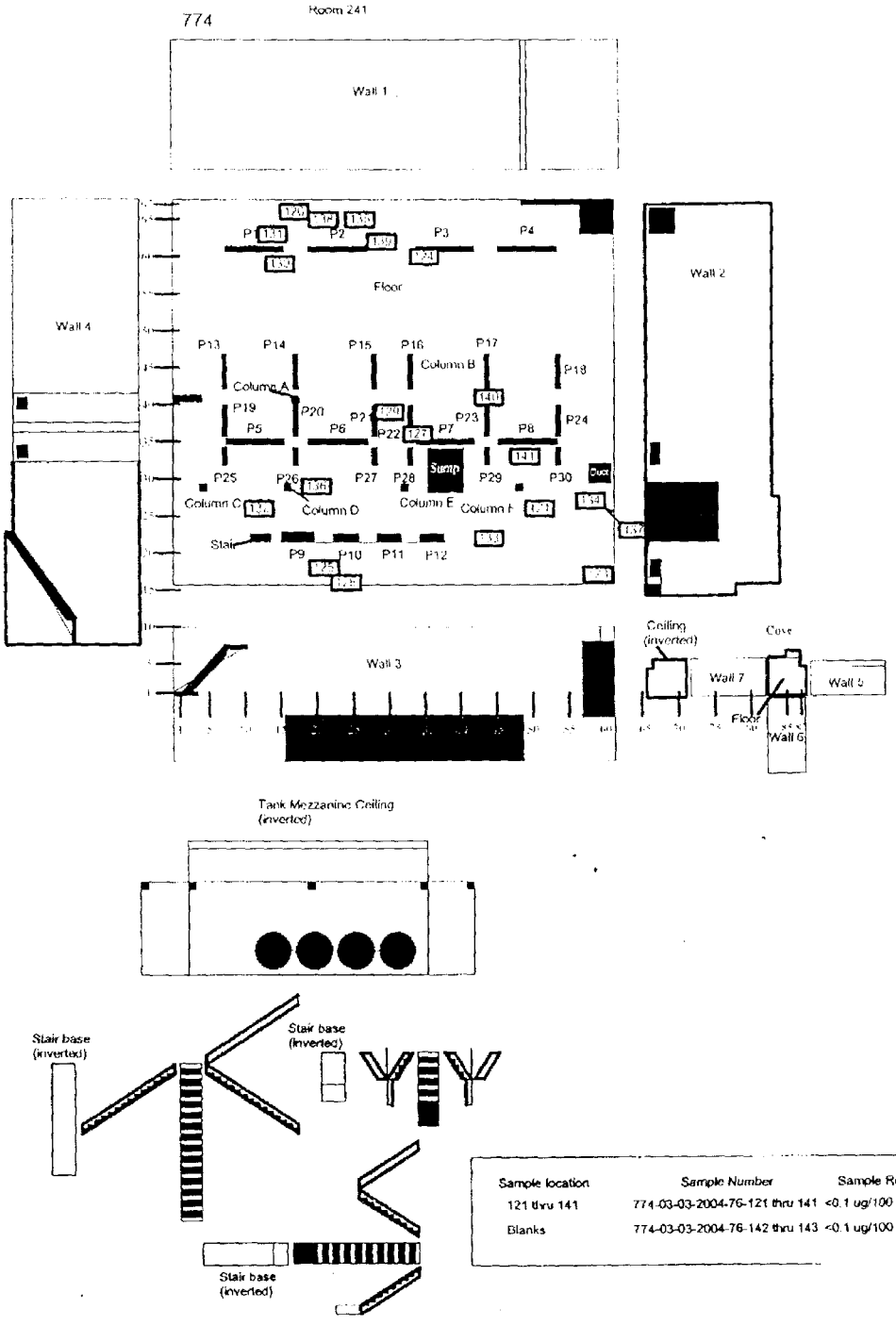
Chemical Data Summaries and Sample Maps.

BERYLLIUM CHARACTERIZATION SURVEY FOR BUILDING 771 CLUSTER

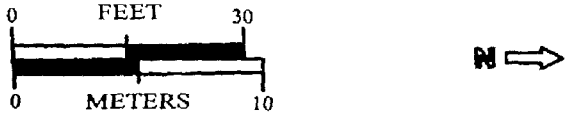
Survey Area: AM **Survey Unit: 771054 (Be)** **Classification: N/A**
Building: 774
Survey Unit Description: Room 241

Total Floor Area: 2993 sq. ft **Total Area: N/A** **Grid Size: 1 ft x 1 ft**

SURVEY UNIT 771054 (Be) - MAP 1 OF 1



Sample location	Sample Number	Sample Result
121 thru 141	774-03-03-2004-76-121 thru 141	<0.1 ug/100 sq. cm
Blanks	774-03-03-2004-76-142 thru 143	<0.1 ug/100 sq. cm



N

SURVEY MAP LEGEND

Industrial Hygiene Information System
Surface Sample Report

Date: 03/10/2004

RIN: 04Z1279

Sample Number/Type: 774-03032004-76-121 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-122 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-123 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-124 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-125 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-126 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-127 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-128 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-129 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-130 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-131 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-132 WIPE Hygienist: TONYA BEAN

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Name/Org: I.A. Nesheim Date 07/03/08
EMCBC CLASS'N OFFICE

Industrial Hygiene Information System
Surface Sample Report

IHISR_SURFACE_SAMPLE
Date: 03/10/2004
RIN: 04Z1279

Sample Number/Type: 774-03032004-76-132 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-133 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-134 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-135 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-136 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-137 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-138 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-139 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-140 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-141 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-142 WIPE Hygienist: TONYA BEAN
Location Info: SURVEY UNIT 771054 FLOOR WIPES ROOM 241
Room No: 241
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-03032004-76-142B BLANK Hygienist: TONYA BEAN

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Industrial Hygiene Information System
Surface Sample Report

IHISR_SURFACE_SAMPLE
Date: 03/10/2004
RIN: 04Z1279

Sample Number/Type: 774-03032004-76-142B BLANK Hygienist: TONYA BEAN
Location Info:
Room No:
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG

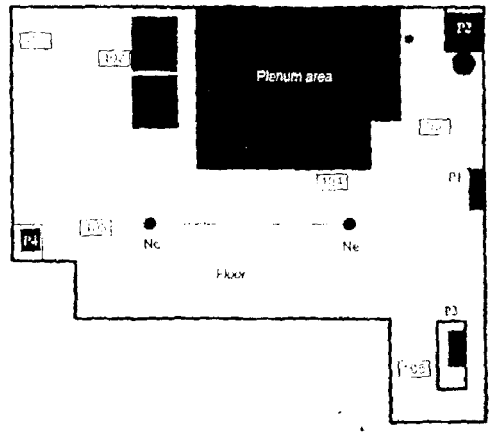
Sample Number/Type: 774-03032004-76-143B BLANK Hygienist: TONYA BEAN
Location Info:
Room No:
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG

BERYLLIUM CHARACTERIZATION SURVEY FOR THE 771 CLUSTER

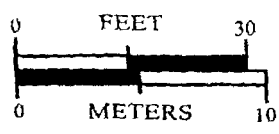
Survey Area: AM Survey Unit: 771056 Be Classification: NA
Building: 774
Survey Unit Description: Room 341 Floor

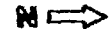
Total Floor Area: 524 sq. ft. Total Area: NA Grid Size: NA

SURVEY UNIT 771056 Be - MAP 1 OF 1



Sample location	Sample Number	Sample Result
101 thru 106	774-04-07-2004-76-101 thru 106	<0.1 ug/100 sq. cm
Blanks	774-04-07-2004-76-113B thru 114B	<0.1 ug/100 sq. cm





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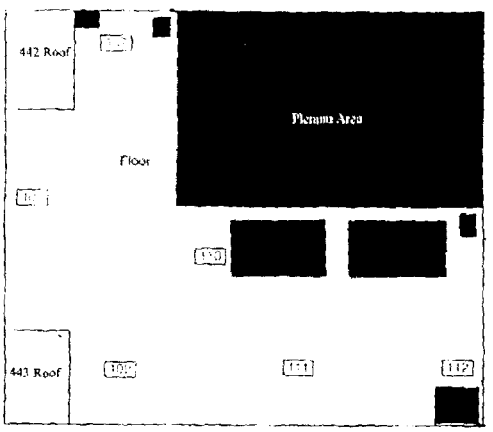
BERYLLIUM CHARACTERIZATION SURVEY FOR THE 771 CLUSTER

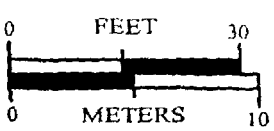
Survey Area: AM **Survey Unit:** 771057 Be **Classification:** NA
Building: 774
Survey Unit Description: Room 441 Plenum

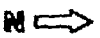
Total Floor Area: 1015 sq. ft. **Total Area:** NA **Grid Size:** NA

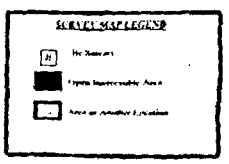
SURVEY UNIT 771057 Be - MAP 1 OF 1



Sample location	Sample Number	Sample Result
107 thru 112	774-04-07-2004-76-107 thru 112	<0.1 ug/100 sq. cm
Blanks	774-04-07-2004-76-113B thru 114B	<0.1 ug/100 sq. cm







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Industrial Hygiene Information System
Surface Sample Report

IHISR_SURFACE_SAMPLE
Date: 04/12/2004
RIN: 04Z1644

Sample Number/Type:	774-04072004-76-101	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	341		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-102	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	341		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-103	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	341		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-104	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	341		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-105	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	341		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-106	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	341		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-107	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	441		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-108	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	441		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-109	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	441		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-110	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	441		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-111	WIPE	Hygienist: TONYA BEAN
Location Info:	FINAL SURVEY ON FLOOR		
Room No:	441		
Analyte:	BERYLLIUM AND BE COMPOUNDS (AS BE)		
Concentration:	< 0.1000 _ UG/100CM2		
Sample Number/Type:	774-04072004-76-112	WIPE	Hygienist: TONYA BEAN

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Name/Org: J. A. Nesheim Date: 07/03/08
EM/CBC CLASSIFICATION OFFICE

~~OFFICIAL USE ONLY~~

~~Contains information which may be exempt from public release under the Freedom of Information Act (5 USC 552), exemption number(s) 2. Approval by the Department of Energy prior to public release is required.~~

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Industrial Hygiene Information System
Surface Sample Report

IHISR_SURFACE_SAMPLE

Date: 04/12/2004

RIN: 04Z1644

Sample Number/Type: 774-04072004-76-112 WIPE Hygienist: TONYA BEAN
Location Info: FINAL SURVEY ON FLOOR
Room No: 441
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 774-04072004-76-113B BLANK Hygienist: TONYA BEAN
Location Info:
Room No:
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG

Sample Number/Type: 774-04072004-76-114B BLANK Hygienist: TONYA BEAN
Location Info:
Room No:
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG

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Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING B771/774, Roof

REVISION 1

April 7, 2004

CLASSIFICATION REVIEW NOT REQUIRED PER
EXEMPTION NUMBER CEX-005-02

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PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 771/774, Roof

REVISION 1

April 7, 2004

Prepared by: _____ Date: 4/7/04
Albert W. Wolff, Radiological Engineer

Reviewed by: _____ Date: 4-7-04
Tommy Fontaine, Radiological Engineer

Reviewed by: _____ Date: 4/7/04
Sarah Roberts, Radiological Safety Manager

Approved by: _____ Date: 4/7/04
Chris Gilbreath, B771 Project Manager

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TABLE OF CONTENTS

ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
PDSR	Pre-demolition survey report
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSOP	RFCA Standard Operating Protocol
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity

VOCs	Volatile organic compounds
WSRIC	Waste Stream and Residue Identification and Characterization

EXECUTIVE SUMMARY

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 771/774 Roof. Because this Type 3 area will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS include the roofs of Buildings 771 and 774 including the Building 771 Annex (771C) roof and the B771 Indirect and Direct Evaporative Cooler Area (IDEC) roof.

The PDS encompassed both chemical and radiological characterization. The characterization was built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project.*

Based upon the results of this PDSR, the 771/774 Roof meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan. The Building 771/774 Roof can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and PDS data remain valid, Level 2 isolation controls are established, however, the area will not be posted because personnel do not routinely access these areas.

1 INTRODUCTION

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 771/774 Roof. Because this Type 3 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). The results of this survey shall demonstrate that the 771/774 Roof meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan prior to demolition. Building surfaces characterized as part of this PDS include the roofs of Buildings 771 and 774 including the Building 771 Annex (771C) roof and the B771 Indirect and Direct Evaporative Cooler Area (IDEC) roof.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is the Building 771/774 Roof. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 3 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for the Building 771/774 Roof. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 771/774 Roof PDS effort. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of a facility. The pre-demolition conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the pre-demolition radiological and chemical conditions of the Building 771/774 Roof.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Section 2.0 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Hazards Characterization Report was conducted to understand the facility history and related hazards. The Building 771 Hazards Characterization was

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performed in June 2001 (Refer *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0). Based on the characterization results, radiological contamination was identified in Buildings 771 and 774, and the Building 771/774 was identified as a Type 3 facility. Therefore, a PDS was required before demolition of the facility.

However, the survey unit that encompasses the 771/774 roofs is classified as Class 3 based on contamination potential, per Section 3.0 of the PDSP.

This report documents the results of that PDS. The hazards characterization results and historical review (refer to Attachment D) were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. Characterization documentation is located in the Building 771 Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The Building 771/774 Roof was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern (weapons-grade plutonium isotopes). Based upon a review of the characterization data, historical and process knowledge, in-process survey data, building walk-downs, and PDSP guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to survey package 771103). A Survey Unit Overview Map is presented in Attachment A. Based on hazard characterization data and historical and process knowledge, transuranic isotopes are the primary contaminants of concern in Buildings 771/774. Therefore, the PDS was performed to the transuranic PDS unrestricted release criteria. Individual radiological survey unit packages are maintained in the Building 771 Characterization Project files.

The Building 771/774 Roof survey unit package was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and media samples were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, and survey locations are presented in Attachment A, *Radiological Data Summary and Survey Maps*.

Building 771/774 Roof– (Survey Unit 771103)

The Class 3 classification is based on the low contamination potential for the building exterior. The most likely sources of contamination of this area include the 1957 Building 771 fire, the 1969 Building 776 fire, and other miscellaneous airborne emission sources from the site. However, environmental sampling performed to date indicates that the

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fires did not spread detectable contamination into the surrounding soils. Therefore, contamination would not be expected on structural exteriors.

Twenty (20) biased media samples were collected on the B771 roof in December of 2000. Based on the conservative method of bringing all the activity in a media sample to the surface, three (3) of the original biased twenty (20) samples exceeded 100 dpm/100 cm^2 , but were less than 300 dpm/100 cm^2. The results were likely skewed due to high sample weight (maximum pCi/g result 0.34 pCi/g Am and Pu, sample mass at same location 470 grams). The three (3) elevated locations were resampled in 2003. Per the RFETS Regulatory Contact Record dated November 5, 2003, in order to minimize skewness of the data each roof layer was separated and analyzed separately. In addition, the samples were allowed to dry. All resample results at these locations were less than the DCGLw of 100 dpm/100cm^2. The original three (3) elevated location results out of twenty (20) total samples were replaced with the updated data. Since these three (3) locations were replaced with seven (7) samples, a total of twenty-four (24) total samples were reported. Refer to the map in Attachment B for sample locations.

Per the RFETS Regulatory Contact Record dated November 5, 2003, fifteen (15) random TSA/RSA measurements were collected above and below the roofing material. The gravel was removed from the top layer and TSA/RSA data collected on the exposed tar. The tar/gravel/felt layer was then removed, exposing the base concrete. Fifteen (15) additional TSA/RSA measurements were then collected on the concrete. In addition, field checks of the gravel were also performed. All TSA and RSA survey results were less than the applicable PDS transuranic DCGL values. The random TSA/RSA measurements could not be performed on the original building 771/774 roof due to poor drainage (area was and remains saturated with water to date). The areas surveyed include the 320 roof and the plenum building (Room 441) roof. Refer to the map in Attachment A for survey locations.

At the request of the CDPHE, on April 2, 2004, fifteen (15) additional biased TSA/RSA measurements were taken on horizontal surfaces of the Building 771 roof that have been in place since original construction. Results of these samples were all less than the DCGLw. Refer to the map in Attachment A for survey locations.

Due to the geometry of the tar and stone material on the roof, surface scans were not performed.

Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771103 are presented in Attachment A, *Survey Unit 771103 Radiological Data Summary and Survey Map.*

Additional Radiological Considerations

An approximately 100 ft^2 section of the metal corrugated roof covering the B771 main plenum exhaust tunnel was contaminated from a spill occurring during D&D operations. This occurred in September of 2002 during the removal of a waste oil transfer line originating in B776 and terminating in B774 (IWCP T0109841). Although the spill was immediately cleaned up and removable contamination levels were <20 dpm/100cm^2,

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fixed contamination, with a range of 174 to 423 dpm/100cm^2, remains on this section of roof. This section of roof was excluded from this survey unit and will be disposed of as radioactive waste. Refer to Attachment E for location of area to be removed.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

4.1 Asbestos

Building 771 Roof

Asbestos-containing building material is present in the building 771 roof (Refer to Attachment B for sampling locations and results). Approximately 2600 square feet of silver painted tar-impregnated built up roofing and roof flashing is still present on the 771 roof. The material is non-friable and will be removed during building demolition and disposed of as non-friable asbestos sanitary waste.

Building 774 Roof

Asbestos containing building material is present in the building 774 roof (Refer to Attachment B for sampling locations and results). Approximately 2250 square feet of asbestos containing roofing material, and 600 square feet silver painted tar impregnated built up roofing, as well as roof flashing is still present on the 774 roof. The material is non-friable and will be removed during building demolition and disposed of as non-friable asbestos sanitary waste.

4.2 Beryllium (Be)

The roof of building 771 and 774 is not and has never been a beryllium-controlled area. There is no potential source for beryllium to contaminate the roof.

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

The incidental lead-sheeting installed as flashing on piping system vents will be removed during or prior to demolition and disposed of hazardous waste (D008). Estimated volume for this type of material is 60 ft^2.

4.4 Polychlorinated Biphenyls (PCBs)

Many "older" roofing tars used PCBs in their construction, and "hits" for PCBs have been found on the roofs of buildings 707 and 779. The assumption must be made that the roof tar of building 771 and 774 contains PCBs unless analysis can prove otherwise. As such, the roof tarring material should be handled as PCB Bulk Product Waste.

5 PHYSICAL HAZARDS

Physical hazards associated with the B771/774 Roof consist of those common to standard industrial environments, and include hazards associated with utilities, and trips and falls.

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There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration.

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 771/774 Roof, and consequent waste management, is of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments A and B) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are presented in Attachment C. The DQA Checklists are provided in the individual survey unit packages (located in the Building 771 Characterization Files).

The Minimum Detectable Activity (MDA) for each PDS instrument was determined *a priori* based on typical parameters (background, efficiency, and count time). A list of radiological field instrumentation and associated sensitivities is presented in Table 1. This table is based on Section 5.1 of the MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

Table 1
PDS Radiological Field Instrumentation and Minimum Detectable Activities

Model	Measurement Type	MDA (dpm/100 cm^2)
NE Electra DP6	TSA	48
Eberline SAC-4	Removable (Smears)	10

7 DECOMMISSIONING WASTE TYPES

The demolition and disposal of Building 771/774 Roof will generate a variety of wastes. The roofing material will be disposed of as non-friable asbestos, PCB Bulk Product waste. The remaining concrete roof may be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete provided that the ceiling beneath is free-released.

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8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, the Building 771/774 Roof is classified as an RFCA Type 3 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Based upon the results of this PDSR, the 771/774 Roof meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan and is ready for demolition. The PDS for the Building 771/774 Roof was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria.

Radiological contamination in excess of the PDSP Table 7-1 limits was not detected in the Building 771/774 Roof.

Based upon this PDSR, the Building 771/774 Roof can be demolished and the waste managed as PCB Bulk Product waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and that PDS data remain valid, Level 2 isolation controls have been established.

9 REFERENCES

B771 and B774 Hazards Characterization Report for the 771 Closure Project, dated June 12, 2001, Revision 0.

DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

DOE Order 414.1A, *Quality Assurance*

EPA, 1994. *The Data Quality Objective Process*, EPA QA/G-4.

K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 2, March 10, 2003.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, *Asbestos Characterization Procedure*, Revision 0, August 24, 1999.

PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

***RFETS, RFCA RSOP for Recycling Concrete*, September 28, 1999**

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ATTACHMENT A

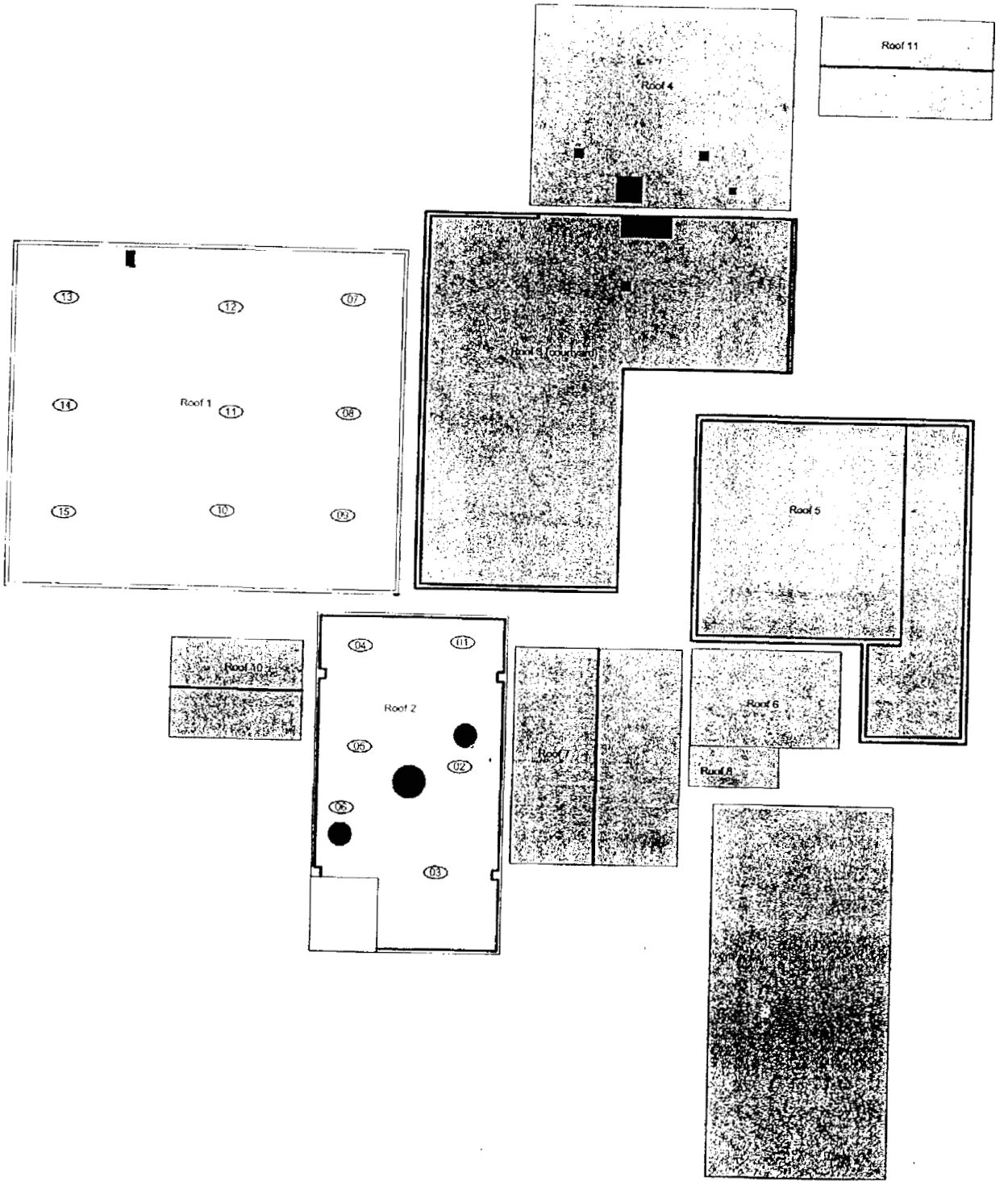
Survey Unit 771103
Radiological Data Summary and Survey Unit Overview Maps

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL Survey Unit: 771103 Classification: 3
Building: 771/774
Survey Unit Description: 774 Roofing Areas

Total Floor Area: NA Total Area: 484 sq. m Grid Size: N/A

SURVEY UNIT 771103 - MAP 1 OF 1



0 FEET 30
0 METERS 10

N

SURVEY MAP LEGEND

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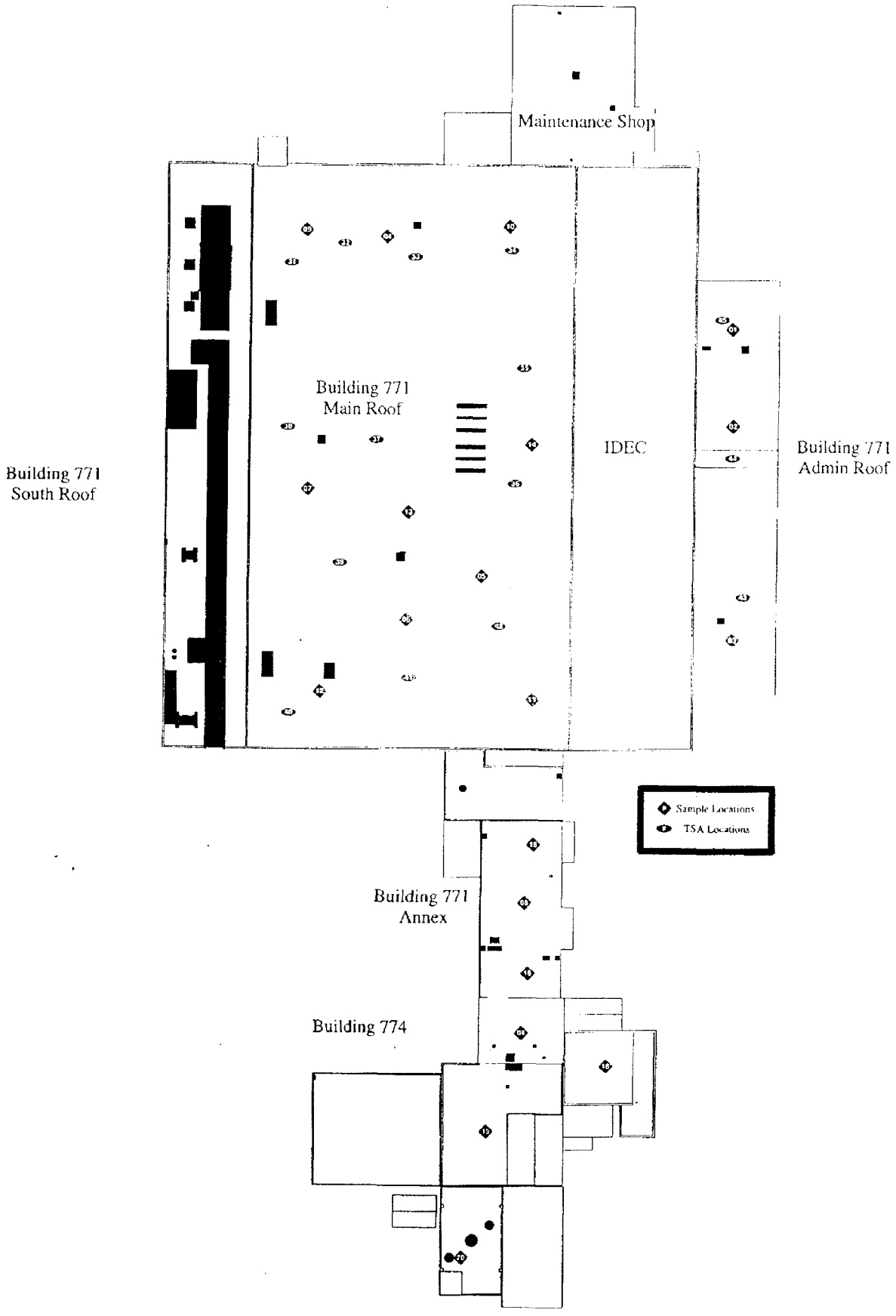
Building 771/774 Roof Sample Locations



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Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 45 Number Performed 30 Number QC Performed: 6

Alpha

Maximum:	65.9 dpm/100cm²
Minimum:	<20.7> dpm/100cm²
Mean:	13.9 dpm/100cm²
Standard Deviation:	23.9
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Removable Surface Activity Measurements

Number Required: 45 Number Performed: 30

Alpha

Maximum:	2.4 dpm/100cm²
Minimum:	<1.5> dpm/100cm²
Mean:	<0.4> dpm/100cm²
Standard Deviation:	1.0
Transuranic DCGLw:	20.0 dpm/100cm²
Uranium DCGLw:	1,000.0 dpm/100cm²

Media Sample Results

Number Required: 20 Number Samples: 24

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Transuranic

Maximum:	87.0 dpm/100cm²
Minimum:	<25.0> dpm/100cm²
Mean:	15.5 dpm/100cm²
Standard Deviation:	26.3
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc	300.0 dpm/100cm²

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Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	512326	11/19/03	SAC-4	1053	NA	04/14/04	0.333	NA	10.00	10.00
2	512326	11/19/03	SAC-4	1491	NA	03/25/04	0.333	NA	10.00	10.00
3	512326	11/19/03	SAC-4	1354	NA	02/22/04	0.333	NA	10.00	10.00
4	512326	11/19/03	SAC-4	1410	NA	04/07/04	0.333	NA	10.00	10.00
5	515011	11/19/03	SAC-4	1053	NA	04/14/04	0.333	NA	10.00	10.00
6	515011	11/19/03	SAC-4	1491	NA	03/25/04	0.333	NA	10.00	10.00
7	515011	11/19/03	SAC 4	1354	NA	02/22/04	0.333	NA	10.00	10.00
8	515011	11/19/03	SAC-4	1410	NA	04/07/04	0.333	NA	10.00	10.00
9	512326	11/19/03	Electra	395	DP-6	05/04/04	0.223	NA	48.00	NA
10	515011	11/19/03	Electra	392	DP-6	03/16/04	0.224	NA	48.00	NA
11	512326	04/02/04	Electra	1367	DP-6	06/17/04	0.220	NA	48.00	NA
12	702381	04/02/04	Electra	391	DP-6	08/20/04	0.221	NA	48.00	NA
13	702381	04/02/04	SAC-4	1185	NA	08/09/04	0.333	NA	10.00	10.00
14	702381	04/02/04	SAC-4	1053	NA	07/22/04	0.333	NA	10.00	10.00

Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771103PRP-N001	1	-.9	N/A
771103PRP-N002	4	-1.5	N/A
771103PRP-N003	2	.3	N/A
771103PRP-N004	2	-1.2	N/A
771103PRP-N005	1	-.9	N/A
771103PRP-N006	2	-1.2	N/A
771103PRP-N007	3	.9	N/A
771103PRP-N008	4	-1.5	N/A
771103PRP-N009	1	-.9	N/A
771103PRP-N010	2	.3	N/A
771103PRP-N011	3	2.4	N/A
771103PRP-N012	4	.0	N/A
771103PRP-N013	1	-.9	N/A
771103PRP-N014	2	-1.2	N/A
771103PRP-N015	3	.9	N/A
771103PRP-N016	5	-.9	N/A
771103PRP-N017	6	-1.2	N/A
771103PRP-N018	5	-.9	N/A
771103PRP-N019	7	-.6	N/A
771103PRP-N020	8	-1.5	N/A
771103PRP-N021	5	-.9	N/A
771103PRP-N022	7	.9	N/A
771103PRP-N023	8	-1.5	N/A
771103PRP-N024	5	-.9	N/A
771103PRP-N025	6	.3	N/A
771103PRP-N026	7	.9	N/A
771103PRP-N027	8	.0	N/A
771103PRP-N028	5	.6	N/A
771103PRP-N029	6	-1.2	N/A
771103PRP-N030	7	.9	N/A

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771103PBP-N031	13	-.3	N/A

Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Removable Surface Activity Data Sheet

Random Sample Location / Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771103PBP-N032	14	-1.2	N/A			
771103PBP-N033	13	2.7	N/A			
771103PBP-N034	14	.3	N/A			
771103PBP-N035	13	2.7	N/A			
771103PBP-N036	14	.3	N/A			
771103PBP-N037	13	1.2	N/A			
771103PBP-N038	14	1.8	N/A			
771103PBP-N039	13	-.3	N/A			
771103PBP-N040	14	.3	N/A			
771103PBP-N041	13	2.7	N/A			
771103PBP-N042	14	1.8	N/A			
771103PBP-N043	13	-.3	N/A			
771103PBP-N044	14	.3	N/A			
771103PBP-N045	13	-.3	N/A			

Comments: Surveys 1-15 taken on base of roof. Surveys 16-30 taken on top of tar media. The "a priori" MDA for the SAC-4 is 10 dpm/100cm2 (from PCSP, Rev. 1, Section 5.1). An additional 15 bias RSA and TSA were taken on the roof on flat spots.

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Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771103PRP-N001	9	51.1	N/A
771103QRP-N001	10	12.1	N/A
771103PRP-N002	9	9.4	N/A
771103PRP-N003	9	-5.9	N/A
771103PRP-N004	9	33.1	N/A
771103PRP-N005	9	24.2	N/A
771103PRP-N006	9	27.3	N/A
771103PRP-N007	9	47.9	N/A
771103PRP-N008	9	47.9	N/A
771103PRP-N009	9	30.0	N/A
771103PRP-N010	9	6.2	N/A
771103PRP-N011	9	54.2	N/A
771103PRP-N012	9	15.2	N/A
771103PRP-N013	9	27.3	N/A
771103QRP-N013	10	23.7	N/A
771103PRP-N014	9	65.9	N/A
771103PRP-N015	9	27.3	N/A
771103QRP-N016	9	-3.0	N/A
771103PRP-N016	10	32.8	N/A
771103PRP-N017	10	.3	N/A
771103PRP-N018	10	10.5	N/A
771103PRP-N019	10	-14.9	N/A
771103PRP-N020	10	-6.0	N/A
771103PRP-N021	10	-2.9	N/A
771103PRP-N022	10	-17.6	N/A
771103PRP-N023	10	.3	N/A
771103PRP-N024	10	.3	N/A
771103PRP-N025	10	-14.9	N/A
771103PRP-N026	10	9.2	N/A
771103PRP-N027	10	-20.7	N/A
771103QRP-N028	9	-17.8	N/A

Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771103PRP-N028	10	-16.3	N/A
771103PRP-N029	10	.3	N/A
771103PRP-N030	10	-2.9	N/A
771103QRP-N031	12	-2.8	N/A
771103QRP-N045	11	6.4	N/A

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771103PBP-N031	11	7.2	N/A
771103PBP-N032	12	7.0	N/A
771103PBP-N033	11	16.3	N/A
771103PBP-N034	12	3.9	N/A
771103PBP-N035	11	43.6	N/A
771103PBP-N036	12	3.9	N/A
771103PBP-N037	11	28.1	N/A
771103PBP-N038	12	31.0	N/A
771103PBP-N039	11	28.1	N/A
771103PBP-N040	12	9.7	N/A
771103PBP-N041	11	43.6	N/A
771103PBP-N042	12	27.8	N/A
771103PBP-N043	11	37.2	N/A
771103PBP-N044	12	18.8	N/A
771103PBP-N045	12	.7	N/A

Comments: Surveys 1-15 taken on top of tar media. Surveys 16-30 taken on base of roof, 31-45 Bias locations with flat surfaces.

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Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
03Z1944-001.001 1	U234	NA	NA	49.20	26.3	NA	NA	
B771 Office Area West End. Original Location # 1, sub-bottom layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0624	0.4241			4	27	Transuranic
	Am241	0.0088	0.0599			1	4	5
03Z1944-002.001 2	U234	NA	NA	5.00	26.3	NA	NA	
B771 Office Area West End. Original Location # 1, bottom layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	1.7912	2.8674			12	19	Transuranic
	Am241	0.2530	0.4050			2	3	13
03Z1944-003.001 3	U234	NA	NA	51.10	26.3	NA	NA	
B771 Office Area West End. Original Location # 1, top layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.1239	0.2011			-8	13	Transuranic
	Am241	-0.0175	0.0284			-1	2	-10
03Z1944-004.001 4	U234	NA	NA	68.90	26.3	NA	NA	
B771 Roof Central Original Location # 6, bottom layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0786	0.5636			7	51	Transuranic
	Am241	0.0111	0.0796			1	7	8
03Z1944-005.001 5	U234	NA	NA	36.10	26.3	NA	NA	
B771 Roof Central Original Location # 6, top layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.4588	1.9966			-22	94	Transuranic
	Am241	-0.0648	0.2820			-3	13	-25
03Z1944-006.001 6	U234	NA	NA	72.70	26.3	NA	NA	
B771 Roof Near NW Floor Drain, Original Location #10, top layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1798	1.0337			17	98	Transuranic
	Am241	0.0254	0.1460			2	14	20
03Z1944-007.001 7	U234	NA	NA	3.92	26.3	NA	NA	
B771 Roof Near NW Floor Drain, Original Location #10, top layer	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2082	6.5348			1	34	Transuranic
	Am241	0.0294	0.9230			0	5	1
01N0073-002.001 8	U234	NA	NA	344.52	26.3	NA	NA	
B771 Office Area Roof, mid	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0160	0.0126			7	6	Transuranic
	Am241	-0.0110	0.1350			-5	61	2

Comments: Sample location numbers 1 through 7 are resamples of RIN 01N0073, points 1, 6, and 10 per Contact Record dated November 5, 2003, 0930

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Survey Area: AL	Survey Unit: 771103	Building: 771

Description: B771/B774 Roof

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in²)	Sample Nuclide (dpm/100cm²)	Sample Nuclide MDA (dpm/100cm²)	Sample Total (dpm/100cm²)
01N0073-003.001 9 B771 Office Area Roof, east end	U234	NA	NA	285.85	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0050	0.1710			-2	64	Transuranic
	Am241	0.0210	0.1640			8	61	6
01N0073-004.001 10 B771 Roof, near center roof drain	U234	NA	NA	391.56	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0280	0.1950			-14	100	Transuranic
	Am241	0.0190	0.1520			10	78	-5
01N0073-005.001 11 B771 Roof, north center	U234	NA	NA	523.24	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0850	0.1920			58	131	Transuranic
	Am241	0.0280	0.2230			19	153	77
01N0073-007.001 12 B771 Roof, south center	U234	NA	NA	883.10	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0180	0.2050			-21	237	Transuranic
	Am241	0.0340	0.0920			39	106	19
01N0073-008.001 13 Annex Roof, East End	U234	NA	NA	192.18	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2890	0.1310			73	33	Transuranic
	Am241	0.0550	0.1640			14	41	87
01N0073-009.001 14 B771 Roof, Near SW Roof Drain	U234	NA	NA	522.70	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0430	0.2380			-29	163	Transuranic
	Am241	0.0620	0.0850			42	58	13
01N0073-011.001 15 B771 Roof, Near NE Roof Drain	U234	NA	NA	363.75	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0340	0.0920			16	44	Transuranic
	Am241	-0.0130	0.1610			-6	77	10
01N0073-012.001 16 B771 Roof, SE by Trane AC Unit	U234	NA	NA	367.72	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0110	0.1350			-5	65	Transuranic
	Am241	0.0490	0.1460			24	70	18

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Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in²)	Sample Nuclide (dpm/100cm²)	Sample Nuclide MDA (dpm/100cm²)	Sample Total (dpm/100cm²)
01N0073-013.001 17 B771 Roof, Near Center Roof Drain	U234	NA	NA	434.61	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0230	0.1790			13	102	Transuranic
	Am241	0.0830	0.1530			47	87	60
01N0073-014.001 18 B771 Roof, SE of North Central Roof Drain	U234	NA	NA	301.15	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0050	0.1550			2	61	Transuranic
	Am241	0.0180	0.1440			7	57	9
01N0073-015.001 19 Annex Roof, West End	U234	NA	NA	96.57	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0530	0.1860			7	24	Transuranic
	Am241	0.0000	0.0900			0	11	7
01N0073-016.001 20 Annex Roof, East End	U234	NA	NA	83.97	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0390	0.2040			4	22	Transuranic
	Am241	0.0330	0.0890			4	10	8
01N0073-017.001 21 B774 Roof, Near West Roof Stack	U234	NA	NA	309.36	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0170	0.1980			-7	80	Transuranic
	Am241	-0.0130	0.1610			-5	65	-12
01N0073-018.001 22 B774 Roof, North Central	U234	NA	NA	34.30	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0890	0.1180			4	5	Transuranic
	Am241	0.0000	0.1160			0	5	4
01N0073-019.001 23 B774 Roof, Courtyard Near Door 15R	U234	NA	NA	376.39	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0380	0.2130			-19	105	Transuranic
	Am241	0.0750	0.2040			37	101	18
01N0073-020.001 24 B774 Roof, SE of Stack Near Door 14R	U234	NA	NA	185.85	26.3	NA	NA	
	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0570	0.1460			14	36	Transuranic
	Am241	0.1050	0.0950			26	23	39

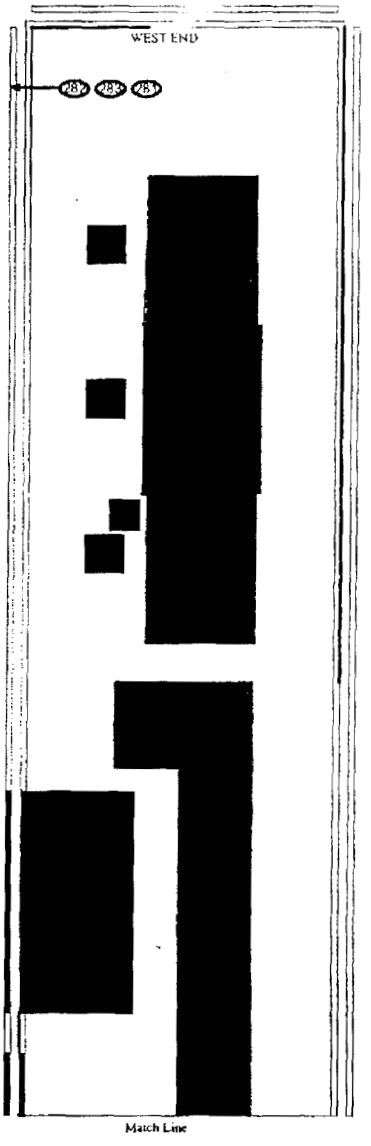
ATTACHMENT B

Chemical Data Summaries and Sample Maps

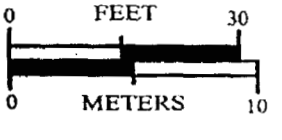
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

Building:
Description: Exterior

Total Floor Area: NA sq. m Total Area: sq. m



Location	Sample Number	Description	Result
281	771-12-18-2000-MS-281	Black fibrous tar with black black tar and silver paint	10.0% chry
282	771 12 18 2000-MS-282	Silver paint	5.0% chry
283	771-12-18-2000-MS-283	Built-up roofing, tar paper & gravel	ND



N

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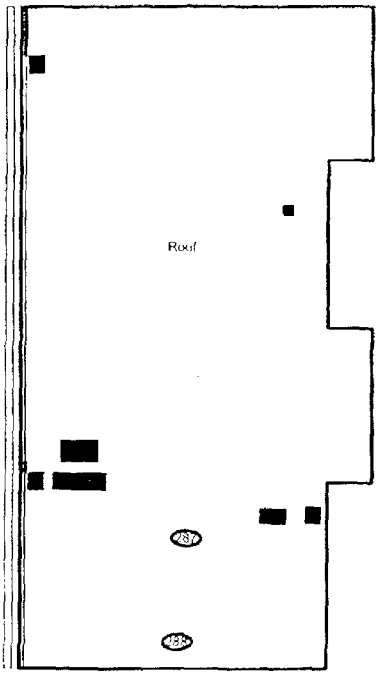
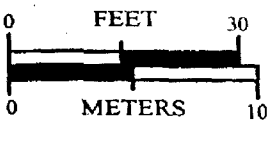
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

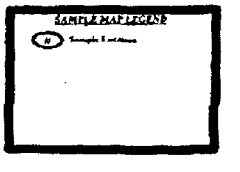
Building: 771C
Description: Roof

Total Floor Area: NA sq. m **Total Area: 344 sq. m**



Location	Sample Number	Description	Result
287	721-12-18-2000-MS-287	Roof flashing, silver paint & tar paper	ND
288	721-12-18-2000-MS-288	Built up roof, tar paper & gravel	ND

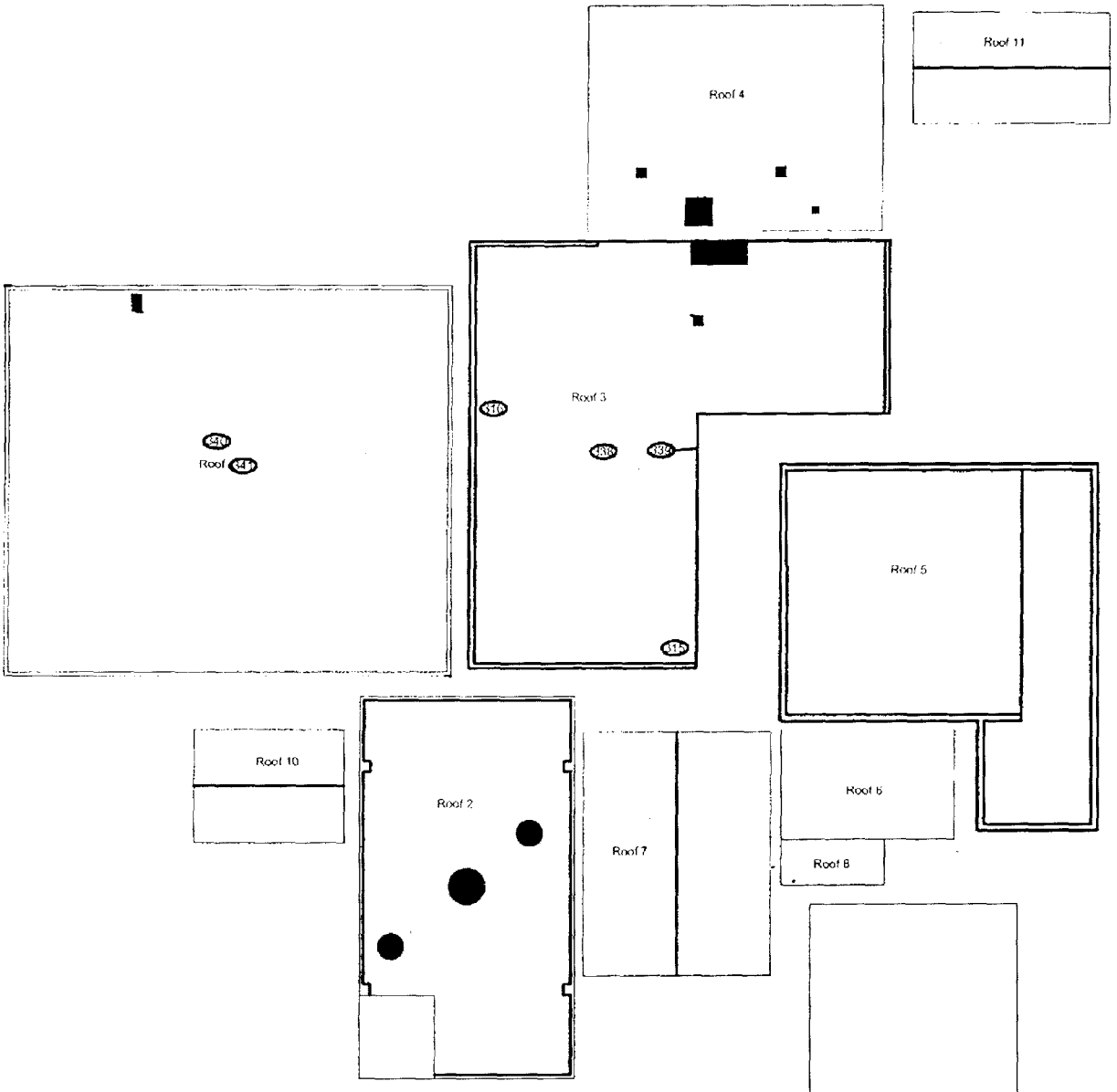




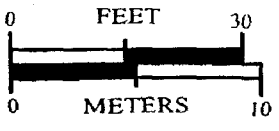
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

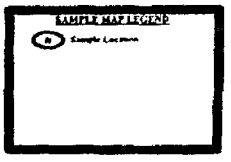
Building: 774
Description: Roof Complex

Total Floor Area: NA sq. m Total Area: 1401 sq. m



Location	Sample Number	Description	Result
315	771-12-27-2000-MS 315	TSI mud on ch water pipe elbow	20.0% chry
316	771-12-27-2000-MS-316	White TSI block on a steam pipe	23.0% chry
338	771-01-04-2001-MS-338	Built-up roofing	ND
339	771-01-04-2001-MS-339	Silver painted roof flashing	6.0% chry
340	771-01-04-2001-MS-340	Silver paint Black fibrous tar	6.0% chry 35.0% chry
341	771-01-04-2001-MS-341	Silver painted sock	3.0% chry

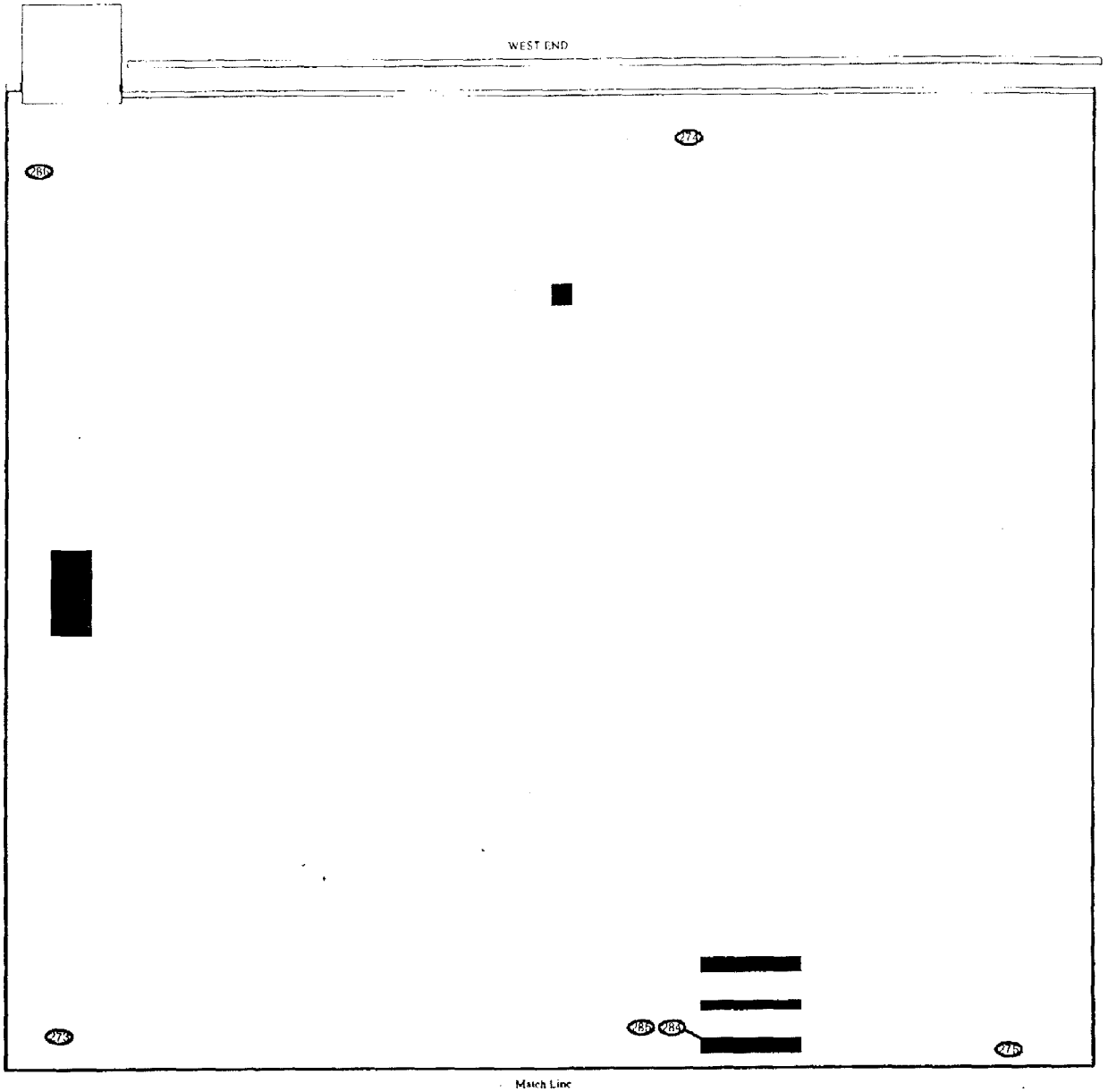




ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

Building: 771
Description: Main Roof

Total Floor Area: NA sq. m **Total Area: sq. m**



Location	Sample Number	Description	Result
273	771-11-20-2000-MS-273	TSI mud on a steam pipe elbow	ND
274	771-11-20-2000-MS-274	TSI mud on a steam pipe elbow	ND
275	771-11-20 2000 MS-275	TSI mud on a steam pipe elbow	ND
284	771-11-20-2000-MS 284	Roof flashing silver paint & tar paper	5.0% chry
285	771-11-20-2000-MS-285	Built up roofing, tar paper & gravel	ND
286	771-11-20-2000-MS-286	Roof flashing, silver paint, mastic, tar paper	3.0% chry

0 FEET 30

0 METERS 10

N

SAMPLE KEY LEGEND

Sample Location

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ATTACHMENT C

Data Quality Assessment

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically asbestos).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed; the radiological survey assessment is provided in Table C-1, and asbestos in C-2. A data completeness summary for all results is given in Table C-3.

All relevant Quality records supporting this report are maintained in the B771/774 Roof Characterization Project Files. Within 30 days of approval by the regulators, this report will be submitted to the CERCLA Administrative Record for permanent storage. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2).

SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable uncertainties.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels, except as noted above. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been implemented to prevent the inadvertent introduction of further contamination into the facility. On this basis, the B771/774 Roof meets the RLCP and PDSP DQO criteria with the confidences stated herein.

Table C-1 V&V of Radiological Surveys – B771/774 Roof

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	initial calibrations	80%<x<120%	Every 6 months	Calibration using Alpha Group procedure and approved technicians.
	daily performance source checks	80%<x<120%	≥1/day	Performed daily/within range.
	local area background: Field	typically < 10 cpm	Each TSA Measurement	All local area backgrounds were within expected Ranges
PRECISION	field duplicate measurements for TSA	≥13% of real survey points	100% of survey packages	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 771103	statistical	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random measurement locations controlled/mapped to ±1 m.
	Controlling Documents (Characterization Pkg.; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA	See Table C-4 for details.
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ DCGL$_w$ per PDSP guidelines.

Table C-2 V&V of Chemical Sampling – B771/B774 Roof Area

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	**METHOD: EPA 600/R-93/116 - PLM Short Report Bulk**	LAB ---->	Reservoirs Environmental, Inc. Denver, Co.	
		RIN Numbers	01N0044, 01N0080, 01N0097	
QUALITY REQUIREMENT		Measure	Frequency	COMMENTS
ACCURACY	Calibrations: Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 17 samples	Semi-quantitative, per (microscopic) visual estimation.
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact: completed paperwork, containers w/ custody seals.
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	See the Asbestos Characterization Report For Building 771/774 (for field/sampling procedures and detailed results. The asbestos inspection was conducted according to the guidelines set forth by the Asbestos Hazard Emergency Response Act (AHERA).
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	Qualitative	NA	Final number of samples at the Certified Building Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

Table C-3 Data Completeness Summary – B771/774 Roof

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	B771/B774 Roof	17	17	The non-friable asbestos waste from the B771/B774 Roof will be segregated during building demolition.	Final number of samples at the Certified Building Inspector's discretion
Radiological	Survey Area: AL Survey Unit: 771103 B771/774 Roof	45 α TSA (15 – Random/Systematic) and 45 α Smears (15 - Random/Systematic) 4 QC TSA 20 Media (Paint)	45 α TSA (15 – Random/Systematic) and 45 α Smears (15 - Random/Systematic) 4 QC TSA 24 Media (Paint)	No elevated contamination at any location; all values below PDS unrestricted release levels	Transuranic DCGLs Media samples targeted biased areas near roof drains RIN01N0073 (Samples numbers 03Z2052-001.001 through 020.001) RIN03Z1944 (Samples numbers 03Z2052-001.001 through 007.001) 7- Re-samples at biased locations in areas identified by sample RIN 01N0073 per Contact Record Dated November 5, 2003 0930: Of the original biased twenty (20) samples three (3) exceeded 100 dpm/100 cm^2, but were less than 300 dpm/100 cm^2. The results were likely skewed due to high sample weight (maximum pCi/g result 0.34 pCi/g Am and Pu, sample mass at same location 470 grams). The three (3) elevated locations were re-sampled in 2003 and the data replaced by the re-samples. A total of twenty-four (24) samples were entered into the FCS database. Each roof layer was separated and analyzed separately.

ATTACHMENT D

Historical Review

Building 771/774 Roof
Historical Review
March 30, 2004

Facility ID: Buildings 771/774, Roof (Survey Area AL)

Anticipated Facility Type (1, 2, or 3): Type 3. Based on low contamination potential, the roof of B771/B774 is classified as a Class 3 survey unit.

Physical Description:

The Building 771 Roof

A flat decking of steel-reinforced concrete forms the roof of Building 771. The roof has an overlay of tar and gravel. The roof is divided into three sections, which run east to west.

- Section 1, which is approximately 41 feet wide by 280 feet long, is the south section above the 2nd floor utility area. This roof section has 7 exhaust vents and 5 covered/capped openings. This section of roof has the doghouse built for the B771stack exhaust tunnel. The doghouse roof is constructed of ribbed metal over insulation. An approximately 20-foot section of the metal corrugated roof covering the B771 main plenum exhaust tunnel was contaminated due to a spill. This occurred in September of 2002 during the removal of a waste oil transfer line originating in B776 and terminating in B774 (IWCP T0109841). Samples of oil from this line indicated up to 1.1E-2 grams per liter Pu. Although the spill was immediately cleaned up, fixed contamination remained on this section of roof. This section of roof was excluded from this survey unit and will be removed prior to roof demolition
- Section 2, is the next roof north, which is approximately 162 feet wide by 280 feet long, and is also above the 2nd floor utility area and electrical motor control center rooms. Roof 2, in approximately the middle section, has 5 cooling tower units. This roof section has many plumbing and heater vents, along with 5 covered/capped openings and a large y-shaped wooden roof walkway.
- Section 3, is the Roof of the IDEC. It consists of steel reinforced concrete roof covered with insulation. At one time the roof had a rubber membrane covering the insulation however this was removed at an earlier date due to wind damage.
- Section 4, which is approximately 41 feet wide by 206 feet long and includes the Transite roof section, is the most northern roof section, and it covers the cafeteria, the "cold" offices, Dock 1, and three north entrance doors (i.e., Doors 1, 2 and 3).

The building 771 (Former 771C) Annex roof is built similar to the B771 roof.

The Building 774 roofs are reinforced concrete slabs or pre-stressed twin-tee reinforced concrete panels covered with ridged insulation, membrane or felt, and asphalt and gravel. The exception is the roof over Room 212 and the third floor break room and office. The roof over Room 212 is corrugated metal. The roof over the break room and office is a ribbed metal roof over insulation.

Historical Operations:
This survey unit consists of structural surfaces only. No processes occurred on the roofs of B771/B774. The most likely sources of contamination of this area include the 1957 Building 771 fire, the 1969 Building 776 fire, and other miscellaneous airborne emission sources from the site. However, environmental sampling performed to date indicates that the fires did not spread detectable contamination into the surrounding soils. Therefore, contamination would not be expected on structural exteriors.

Current Operational Status:
B771 and B774 are no longer in operation.

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Building 771/774 Roof
Historical Review
March 30, 2004

Contaminants of Concern
Asbestos Roof flashing
Beryllium (Be) The roofs of B771/B774 are not RFETS Beryllium (Be) Areas, based on historical and existing classifications, and historical use. Personnel interviews confirm that this area was never a Beryllium area.
Lead Metal flashing used in roof construction (especially of buildings of this age) usually has high levels of lead, and as such, should be separated from the rest of the roofing material, and disposed of as a hazardous waste (D008) under CERCLA. The sheet lead flashing installed on piping systems, such as the sanitary waste drain vents, will be removed prior to demolition. The lead, which may be present in the galvanized flashing around the roof perimeter, will be compared to the amount of other roofing material. If the level of lead is below the RCRA limits, then it will be disposed of as non-hazardous for lead along with the rest of the roof.
RCRA/CERCLA Constituents Personnel interviews indicate that RCRA storage units were never located in this area. See comments concerning lead above.
PCBs Many "older" roofing tars used PCBs in their construction, and "hits" for PCBs have been found on the roofs of buildings 707 and 779. The assumption must be made that the roof tar of building 771 and 774 contains PCBs unless analysis can prove otherwise. As such, the roof tarring material will be handled as PCB Bulk Product Waste.
Radiological Contaminants The contaminants of concern for the 771 project, including all areas of Buildings 771 and 774, are transuranic alpha-emitting radioisotopes (including Pu-238, Pu-239/240, Pu-242, and Am-241). Based on findings documented in Radiological Engineering TBD-00161, Rev. 0, alpha-only surveys assure that the unrestricted-release limits for any other isotopes that may exist in Building 771/774 will not be exceeded.
Environmental Restoration Concerns No Individual Hazardous Substance Sites (IHSS) exist on the B771/B774 exterior surfaces.
Additional Information None
References *(1) B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0. *(2) Building 771/774 Cluster Closure Project Reconnaissance Level Characterization Report*, dated August 8, 1998, Revision 2.
Further Actions Complete the PDS process.

Prepared By: A. Wolff / [signature] / 3/30/04

Name Signature Date

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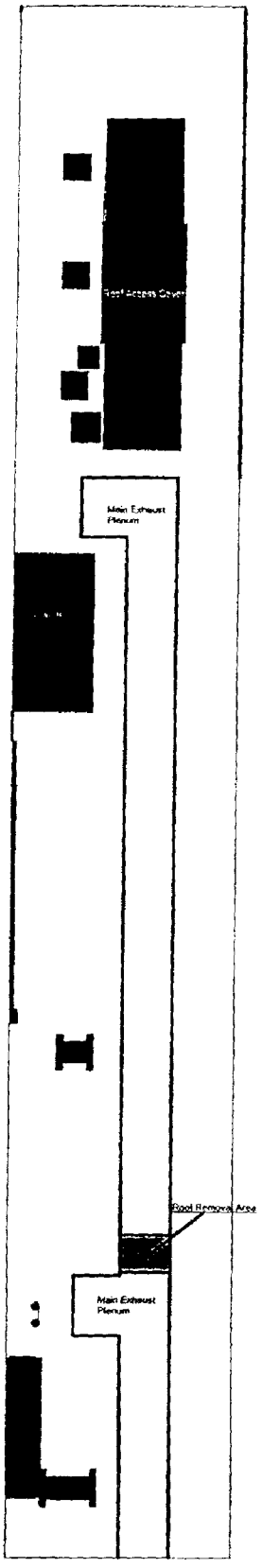
ATTACHMENT E

Miscellaneous Supporting Documentation

WEST END



EAST END

N

771 South Area

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Eberline	Mfg. Eberline	Mfg. N/A
Model SAC 4	Model SAC 4	Model
Serial # 1185	Serial # 820	Serial #
Cal Due 8-9-04	Cal Due 8-18-04	Cal Due
Bkg. 0.2 Cpm	Bkg. 0.2 Cpm	Bkg.
Efficiency 33%	Efficiency 33%	Efficiency
MDA 20 dpm	MDA 20 dpm	MDA
Mfg. Eberline	Mfg. NE Tech	Mfg.
Model SAC 4	Model Electra	Model
Serial # 1053	Serial # 2385	Serial #
Cal Due 7-22-04	Cal Due 6-8-04	Cal Due
Bkg. 0.5 Cpm	Bkg. 8.0 Cpm	Bkg.
Efficiency 33%	Efficiency 21.3%	Efficiency
MDA 20 dpm	MDA 94 dpm	MDA

Survey Type: Contamination (alpha)

Building: 771

Location: 771 Roof

Purpose: Investigation

RWP #: 04-771-1031

Date: 3-12-04 Time: 1400

RCT: K Mote / K Mote [redacted]

Print name / Signature

RCT: Sarzdouc / [signature]

Print name / Signature

PRN/REN #: N/A

Comments:

Survey Tracking No.:771-04-S 00398 **SURVEY RESULTS** A/S Tracking No.:771-04-A N/A

I.D. #	LOCATION	alpha swipe dpm/100cm²	alpha direct dpm/100cm²	alpha wipe dpm/wipe
1	See map	<20	282	N/A
2		<20	324	
3		<20	221	
4		<20	103	
5		<20	103	
6		<20	207	
7		<20	390	
8		<20	563	
9		<20	174	
10		<20	423	
11		<20	230	
12	N/A	N/A	N/A	
13				
14				
15				
16				
17				
18				
19				
20				

I.D. #	LOCATION	alpha swipe dpm/100cm²	alpha direct dpm/100cm²	alpha wipe dpm/wipe
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

Date Reviewed: 3.12.04 **RS Supervision:** EDWARD D. NEEL / Edward D Neel [redacted]

Print Name / Signature

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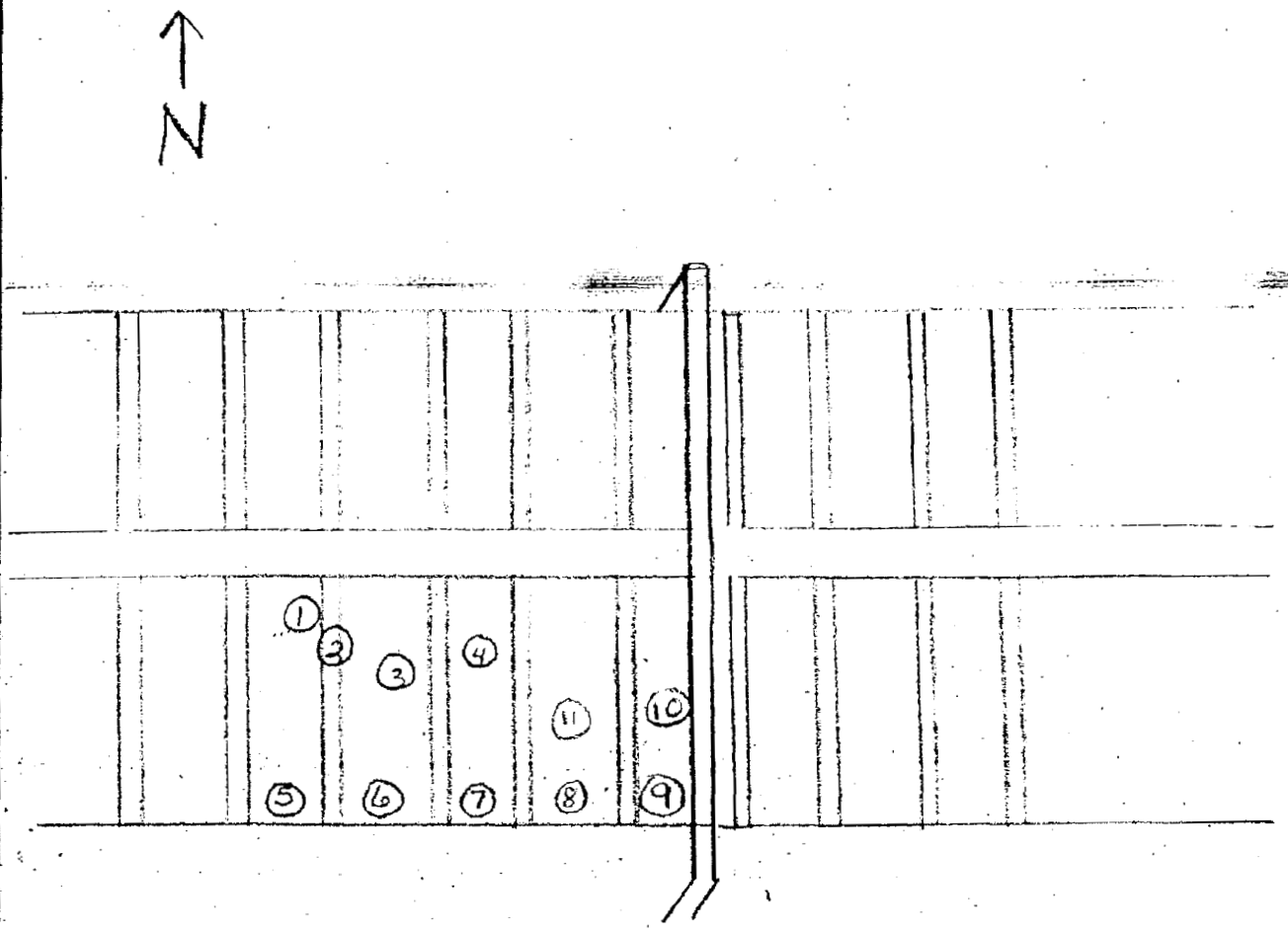
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points



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Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING B771/774, Exterior

REVISION 0

March 30, 2004

CLASSIFICATION REVIEW NOT REQUIRED PER EXEMPTION NUMBER CEX-005-02

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PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 771/774, Exterior

REVISION 0

March 30, 2004

Prepared by: _____ Date: 3-31-04
Tommy Fontaine, Radiological Engineer

Reviewed by: _____ Date: 3/31/04
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Reviewed by: _____ Date: 3/31/04
Sarah Roberts, Radiological Safety Manager

Approved by: _____ Date: 3/31/04
Chris Gilbreath, B771 Project Manager

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ATTACHMENTS

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ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	*Facility Disposition Program Manual*
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	*Individual Hazardous Substance Site*
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
PDSR	Pre-demolition survey report
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSOP	RFCA Standard Operating Protocol
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity

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VOCs	Volatile organic compounds
WSRIC	Waste Stream and Residue Identification and Characterization

EXECUTIVE SUMMARY

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 771/774 Exterior. Because this Type 3 area will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS include the exterior of Buildings 771 and 774.

The PDS encompassed both chemical and radiological characterization. The characterization was built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project*.

Based upon the results of this PDSR, the 771/774 Exterior meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan. The Building 771/774 Exterior can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and PDS data remain valid, Level 2 isolation controls are established, however, the area will not be posted because personnel do not routinely access these areas.

1 INTRODUCTION

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 771/774 Exterior (vertical surfaces). Because this Type 3 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). The results of this survey shall demonstrate that the 771/774 Exterior meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan prior to demolition. Building surfaces characterized as part of this PDS include the Exterior of Buildings 771 and 774.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is the Building 771/774 Exterior. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 3 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for the Building 771/774 Exterior. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 771/774 Exterior PDS effort. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of a facility. The pre-demolition conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the pre-demolition radiological and chemical conditions of the Building 771/774 Exterior (vertical surfaces) that will be free-released and disposed of as sanitary waste or used as backfill per the requirements of the *RFETS, RFCA RSOP for Recycling Concrete*. The roof of Buildings 771/774 is to be included in a different report. The original Building 774 structure (including Rooms 202, 203, and 210), the Annex walls/roof, and a 380 ft^2 section of the east wall of Room 241 will be packaged and disposed of as radioactive waste. Rooms 102 and 103 of Building 774, which are located six feet below the final proposed grade level, will remain *in-situ* and have been filled with a concrete aggregate. A PDS will not be performed for any of these areas.

All areas that will packaged and disposed of as radioactive waste will be protected with fixative and verified to have removable levels less than 20 dpm per 100 cm^2 gross alpha. Contamination control measures to be used during demolition include water and fixative for dust suppression. In addition, demolition activities will be ceased when wind speeds

exceed 15 mph. Close-in air sampling shall be used to ensure the safety of the worker and the public.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Section 2.0 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Hazards Characterization Report was conducted to understand the facility history and related hazards. The Building 771 Hazards Characterization was performed in June 2001 (Refer *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0). Based on the characterization results, radiological contamination was identified in Buildings 771 and 774, and the Building 771/774 was identified as a Type 3 facility. Therefore, a PDS was required before demolition of the facility.

The survey units that encompass most of the 771/774 Exterior (771067, 771069, and 771071) are classified as Class 3 based on their contamination potential, per Section 3.0 of the PDSP. This classification is based on the low contamination potential for the building exterior. The most likely sources of contamination of this area include the 1957 Building 771 fire, the 1969 Building 776 fire, and other miscellaneous airborne emission sources from the site. However, environmental sampling performed to date indicates that the fires did not spread detectable contamination into the surrounding soils. Therefore, contamination would not be expected on structural exteriors.

The original Building 774 structure (including Rooms 202, 203, and 210), the Annex walls/roof, and a 380 ft^2 section of the east wall of Room 241 will be packaged and disposed of as radioactive waste. Rooms 102 and 103 of Building 774, which are located six feet below the final proposed grade level, will remain *in-situ* and have been filled with a concrete aggregate. A PDS will not be performed for any of these areas.

This report documents the results of that PDS. The hazards characterization results and historical review (refer to Attachment F) were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. Characterization documentation is located in the Building 771 Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The Building 771/774 Exterior was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern (weapons-grade plutonium isotopes). Based upon a review of the characterization data, historical and process knowledge, in-process survey data, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the

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minimum survey requirements (refer to survey packages 771067, 771069, and 771071). A Survey Unit Overview Map is presented in Attachment A. Based on hazard characterization data and historical and process knowledge, transuranic isotopes are the primary contaminants of concern in Buildings 771/774. Therefore, the PDS was performed to the transuranic PDS unrestricted release criteria. Individual radiological survey unit packages are maintained in the Building 771 Characterization Project files.

The Building 771/774 Exterior survey unit packages was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and media samples were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachments B, C, and D, *Radiological Data Summary and Survey Maps*.

Building 771 Exterior – (Survey Unit 771067)

The exterior Building 771 was classified as a Class 3 survey unit. The classification was based on the low potential for contamination. A total of 43 random TSA and RSA measurements, and 3 media samples were collected. Surface scans of 532 m^2 (43% of the total surface area) were also performed.

The Building 771 exterior walls, both below and above grade, are cast-in-place steel-reinforced concrete tied to the footings, columns, floors and roof.

Four media samples were originally taken on the exterior of the 771 building in December, 2002 (at the random TSA/RSA locations that were painted with non-original paint). These samples were analyzed as a batch shot. The result of this measurement exceeded the $DCGL_W$ of 100 dpm/100cm^2. Since the exact location of where the contamination came from could not be deduced from the batch shot, each location was re-sampled (on 6/30/03). One sample result exceeded 100 dpm/100 cm^2. This location was on the grating of the B771 dock, which was routinely used for load-out of radiological laundry garments. Because this area had been repainted on numerous occasions, and because grating cannot be adequately surveyed for alpha contamination (due to geometry constraints), the grating was removed and disposed of as radioactive waste. Because this area was removed from the survey unit, only 3 media sample results are reported.

Building 771 IDEC Exterior – (Survey Unit 771069)

The exterior surfaces of Building 771 IDEC were classified as a Class 3 survey unit. The classification was based on the low potential for contamination. The IDEC was constructed in 1987 to support a cooling system for B771, which never went on-line. The

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IDEC construction consists of a metal outer-wall covering sandwiched over insulation. The facility is steel I-beam construction with a metal roof over roof insulation.

A total of 19 random TSA and RSA measurements, and 3 media samples were collected. Surface scans of 275 m^2 (22% of total area) were also performed.

The three paint samples were collected on December 4, 2002, at the random TSA/RSA locations that were painted with a non-original coating. All results were less than the $DCGL_W$ of 100 dpm/100cm^2. In addition, seven coupon samples were collected and analyzed on an alpha spectrometer to verify the presence of Polonium-210 and the absence of plutonium and americium. Polonium-210 was suspected when elevated readings (~ 200 dpm/100 cm^2) were observed on the galvanized metal (flashing, and metal vent covers) during the scanning effort. Polonium-210 was detected on all seven coupon samples. No plutonium or americium was detected.

One of the seven coupon samples was collected at TSA data point 771069PRP-N002. Because this result was verified analytically to be due to naturally-occurring activity (Po-210), the result was reported as zero.

Building 774 Exterior – (Survey Unit 771071)

The exterior surfaces of Room 241, 341, and 441 of Building 774 were classified as a Class 3 survey unit. The classification was based on the potential for contamination due to process history. This reinforced concrete structure, known as the "plenum building", was an add-on to the original Building 774 and was built circa 1972. A small section of the 241 east exterior wall (approximately 380 ft^2), is contaminated due to its proximity to the process waste underground storage tanks (USTs) and will be packaged and disposed of as radioactive waste. The USTs were previously remediated. The remaining portions of Building 774 will be packaged and disposed of as radioactive waste.

A total of 15 random TSA and RSA measurements, and 3 media samples were collected. Surface scans of 155m^2 (17% of total surface area) were performed.

Three media samples were collected at random TSA/RSA locations that were painted with a non-original coating. A gamma-spectrometry batch shot was performed for the three samples. The result was less than the $DCGL_w$ of 100 dpm/100cm^2.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Based on a thorough review of historical and process knowledge, visual inspections, and personnel interviews, no additional chemical hazard sampling requirements were identified.

4.1 Asbestos

Building 771/774 Exterior

Asbestos containing building material is not present in/on the building 771 exterior (vertical surfaces).

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4.2 Beryllium (Be)

The exterior of building 771 and 774 is not and has never been a beryllium-controlled area. In addition, there are no potential sources for beryllium contamination on the vertical exterior surfaces.

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

There are no RCRA/CERCLA contaminants on the vertical exterior surfaces of Buildings 771/774.

4.4 Polychlorinated Biphenyls (PCBs)

There are no indications that the Exterior of B771/771 is contaminated with PCBs.

5 PHYSICAL HAZARDS

Physical hazards associated with the B771/774 Exterior are common to standard industrial environments, and include hazards associated with utilities. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration.

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 771/774 Exterior, and consequent waste management, is of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B, C, and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are presented in Attachment E. The DQA Checklists are provided in the individual survey unit packages (located in the Building 771 Characterization Files).

The Minimum Detectable Activity (MDA) for each PDS instrument was determined *a priori* based on typical parameters (background, efficiency, and count time). A list of radiological field instrumentation and associated sensitivities is presented in Table 1.

Table 1
PDS Radiological Field Instrumentation and Minimum Detectable Activities

Model	Measurement Type	MDA (dpm/100 cm^2)
NE Electra DP6	TSA	48
Eberline SAC-4	Removable (Smears)	10
NE Electra AP6	Scans	300

7 DECOMMISSIONING WASTE TYPES

The demolition and disposal of Building 771/774 Exterior will generate a variety of wastes. Concrete can be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete.

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, the Building 771/774 Exterior is classified as an RFCA Type 3 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Based upon the results of this PDSR, the 771/774 Exterior meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan and is ready for demolition. The PDS for the Building 771/774 Exterior was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria.

A facility walkdown and historical review indicates that no RCRA/CERCLA constituents exist on the B771/774 Area surfaces (refer to Attachment F, Historical Review).

Radiological contamination in excess of the PDSP Table 7-1 limits was not detected in the Building 771/774 Exterior.

Based upon this PDSR, the Building 771/774 Exterior can be demolished and the waste managed as sanitary, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and that PDS data remain valid, Level 2 isolation controls have been established.

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9 REFERENCES

B771 and B774 Hazards Characterization Report for the 771 Closure Project, dated June 12, 2001, Revision 0.

DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

DOE Order 414.1A, *Quality Assurance*

EPA, 1994. *The Data Quality Objective Process*, EPA QA/G-4.

K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 2, March 10, 2003.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, *Asbestos Characterization Procedure,* Revision 0, August 24, 1999.

PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

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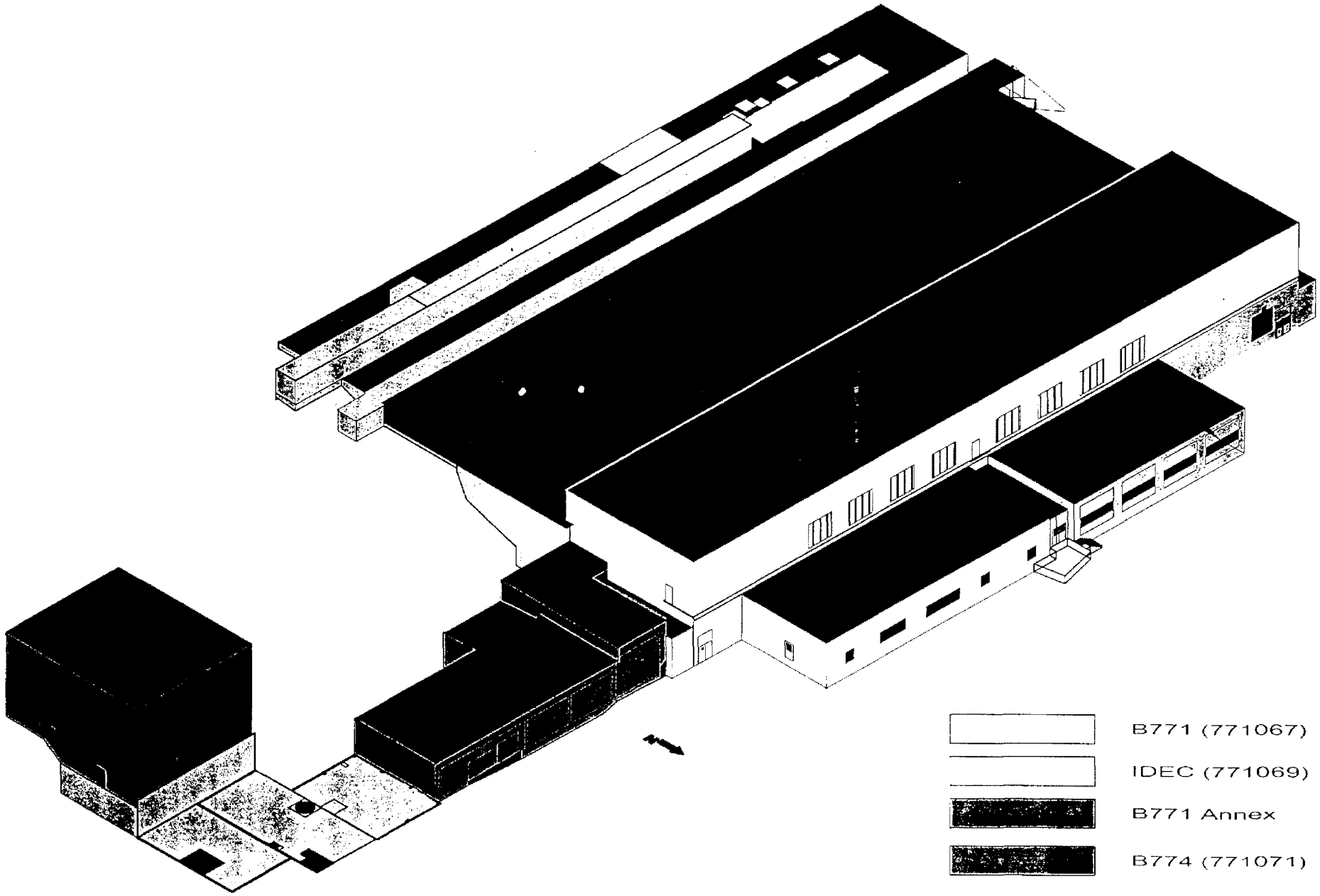
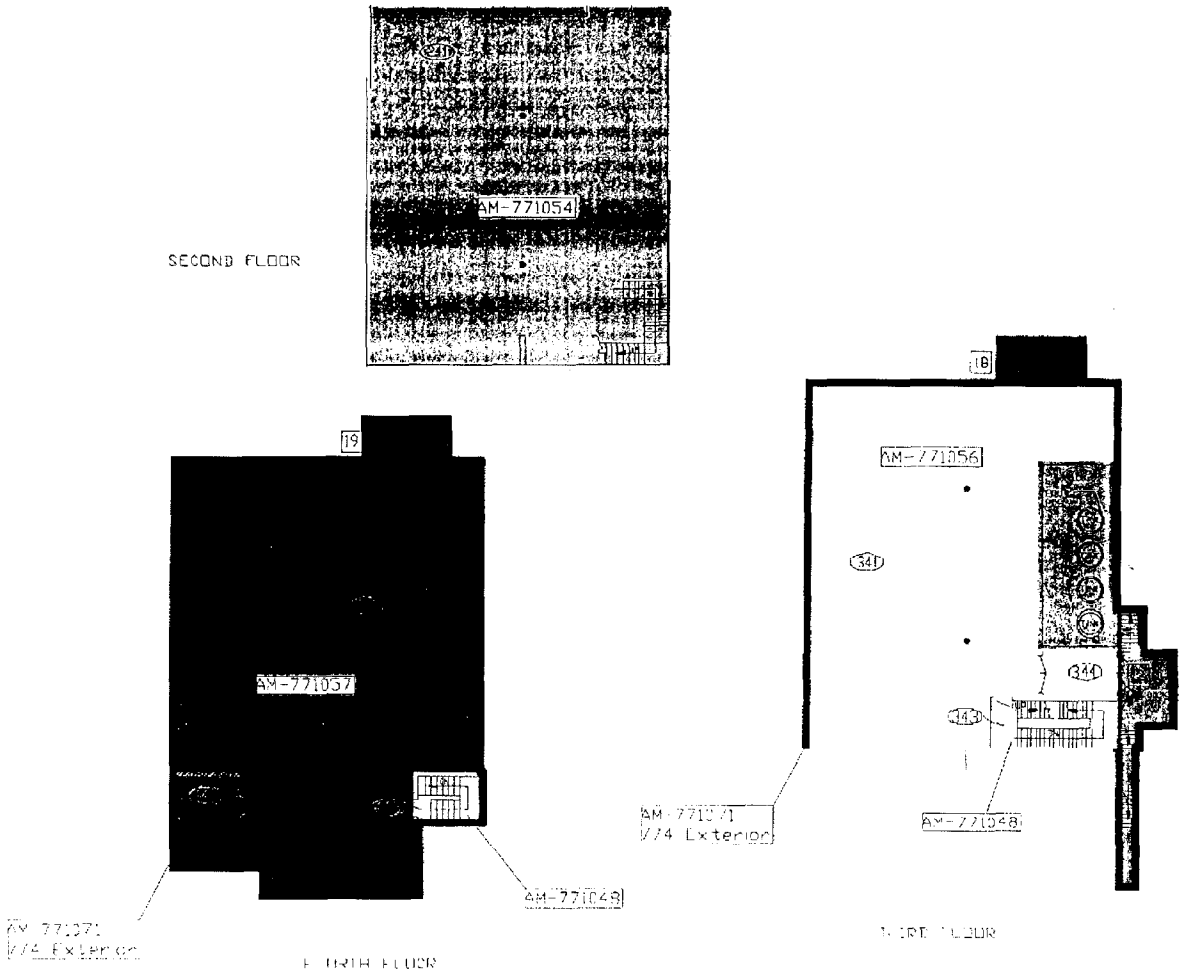
ATTACHMENT A

Survey Unit Overview Map


B771 (771067)
IDEC (771069)
B771 Annex
B774 (771071)

774 Survey Unit Overview



ATTACHMENT B

Survey Unit 771067
Radiological Data Summary and Survey Map

Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 15 Number Performed 43 Number QC Performed: 2

Alpha

Maximum:	170.4 dpm/100cm²
Minimum:	<18.0> dpm/100cm²
Mean:	35.6 dpm/100cm²
Standard Deviation:	34.7
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Removable Surface Activity Measurements

Number Required: 15 Number Performed: 43

Alpha

Maximum:	6.7 dpm/100cm²
Minimum:	<0.9> dpm/100cm²
Mean:	0.3 dpm/100cm²
Standard Deviation:	1.7
Transuranic DCGLw:	20.0 dpm/100cm²
Uranium DCGLw:	1,000.0 dpm/100cm²

Media Sample Results

Number Required: 4 Number Samples: 3

Uranium

Maximum:	4.0 dpm/100cm²
Minimum:	0.0 dpm/100cm²
Mean:	1.7 dpm/100cm²
Standard Deviation:	2.1
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Transuranic

Maximum:	1.0 dpm/100cm²
Minimum:	0.0 dpm/100cm²
Mean:	0.3 dpm/100cm²
Standard Deviation:	0.6
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc	300.0 dpm/100cm²

Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	600931	11/20/02	SAC-4	1406	NA	05/08/03	0.330	NA	10.00	NA
2	600931	11/20/02	SAC-4	845	NA	04/17/03	0.330	NA	10.00	NA
8	600931	11/19/02	Electra	1243	DP-6	05/15/03	0.216	NA	48.00	NA
9	600802	11/20/02	Electra	295	DP-6	05/15/03	0.223	NA	48.00	NA

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Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771067PRP-N001	1	-.9	N/A
771067PRP-N002	2	-.6	N/A
771067PRP-N003	1	-.9	N/A
771067PRP-N004	2	-.6	N/A
771067PRP-N005	1	.6	N/A
771067PRP-N006	2	.9	N/A
771067PRP-N007	1	-.9	N/A
771067PRP-N008	2	2.4	N/A
771067PRP-N009	1	.6	N/A
771067PRP-N010	2	5.5	N/A
771067PRP-N011	1	6.7	N/A
771067PRP-N012	2	-.6	N/A
771067PRP-N013	1	-.9	N/A
771067PRP-N014	2	.9	N/A
771067PRP-N015	1	.6	N/A
771067PRP-N016	2	-.6	N/A
771067PRP-N017	1	.6	N/A
771067PRP-N018	2	-.6	N/A
771067PRP-N019	1	-.9	N/A
771067PRP-N020	2	-.6	N/A
771067PRP-N021	1	-.9	N/A
771067PRP-N022	2	.9	N/A
771067PRP-N023	1	-.9	N/A
771067PRP-N024	2	-.6	N/A
771067PRP-N025	1	.6	N/A
771067PRP-N026	2	-.6	N/A
771067PRP-N027	1	2.1	N/A
771067PRP-N028	2	.9	N/A
771067PRP-N029	1	-.9	N/A
771067PRP-N030	2	-.6	N/A
771067PRP-N031	1	-.9	N/A
771067PRP-N032	2	.9	N/A
771067PRP-N033	1	.6	N/A

Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771067PRP-N034	2	.9	N/A			
771067PRP-N035	1	.6	N/A			
771067PRP-N036	2	-.6	N/A			
771067PRP-N037	1	-.9	N/A			
771067PRP-N038	2	3.9	N/A			
771067PRP-N039	1	-.9	N/A			
771067PRP-N040	2	-.6	N/A			
771067PRP-N041	1	-.9	N/A			
771067PRP-N042	2	-.6	N/A			
771067PRP-N043	1	-.9	N/A			
Biased Sample Location	**Inst / RCT Nbr**	**Net Alpha (dpm/100cm²)**	**Net Beta (dpm/100cm²)**			

Comments: None

Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771067PRP-N001	8	13.0	N/A
771067QRP-N001	9	9.0	N/A
771067PRP-N002	8	-18.0	N/A
771067QRP-N002	9	50.7	N/A
771067PRP-N003	8	16.3	N/A
771067PRP-N004	8	77.9	N/A
771067PRP-N005	8	28.3	N/A
771067PRP-N006	8	44.1	N/A
771067PRP-N007	8	19.1	N/A
771067PRP-N008	8	65.4	N/A
771067PRP-N009	8	9.8	N/A
771067PRP-N010	8	9.8	N/A
771067PRP-N011	8	170.4	N/A
771067PRP-N012	8	3.8	N/A
771067PRP-N013	8	71.8	N/A
771067PRP-N014	8	19.1	N/A
771067PRP-N015	8	28.3	N/A
771067PRP-N016	8	25.5	N/A
771067PRP-N017	8	-5	N/A
771067PRP-N018	8	13.0	N/A
771067PRP-N019	8	3.8	N/A
771067PRP-N020	8	93.1	N/A
771067PRP-N021	8	93.1	N/A
771067PRP-N022	8	19.1	N/A
771067PRP-N023	8	34.8	N/A
771067PRP-N024	8	25.5	N/A
771067PRP-N025	8	16.3	N/A
771067PRP-N026	8	28.3	N/A
771067PRP-N027	8	16.3	N/A
771067PRP-N028	8	62.6	N/A
771067PRP-N029	8	19.1	N/A

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Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771067PRP-N030	8	7.0	N/A
771067PRP-N031	8	53.3	N/A
771067PRP-N032	8	40.8	N/A
771067PRP-N033	8	19.1	N/A
771067PRP-N034	8	34.8	N/A
771067PRP-N035	8	16.3	N/A
771067PRP-N036	8	62.6	N/A
771067PRP-N037	8	50.1	N/A
771067PRP-N038	8	13.0	N/A
771067PRP-N039	8	87.1	N/A
771067PRP-N040	8	53.3	N/A
771067PRP-N041	8	68.6	N/A
771067PRP-N042	8	-14.7	N/A
771067PRP-N043	8	28.3	N/A

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)

Comments: NONE

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Survey Area: AL	Survey Unit: 771067	Building: 771

Description: Building 771 Proper: Exterior

Media Samples Data Sheet

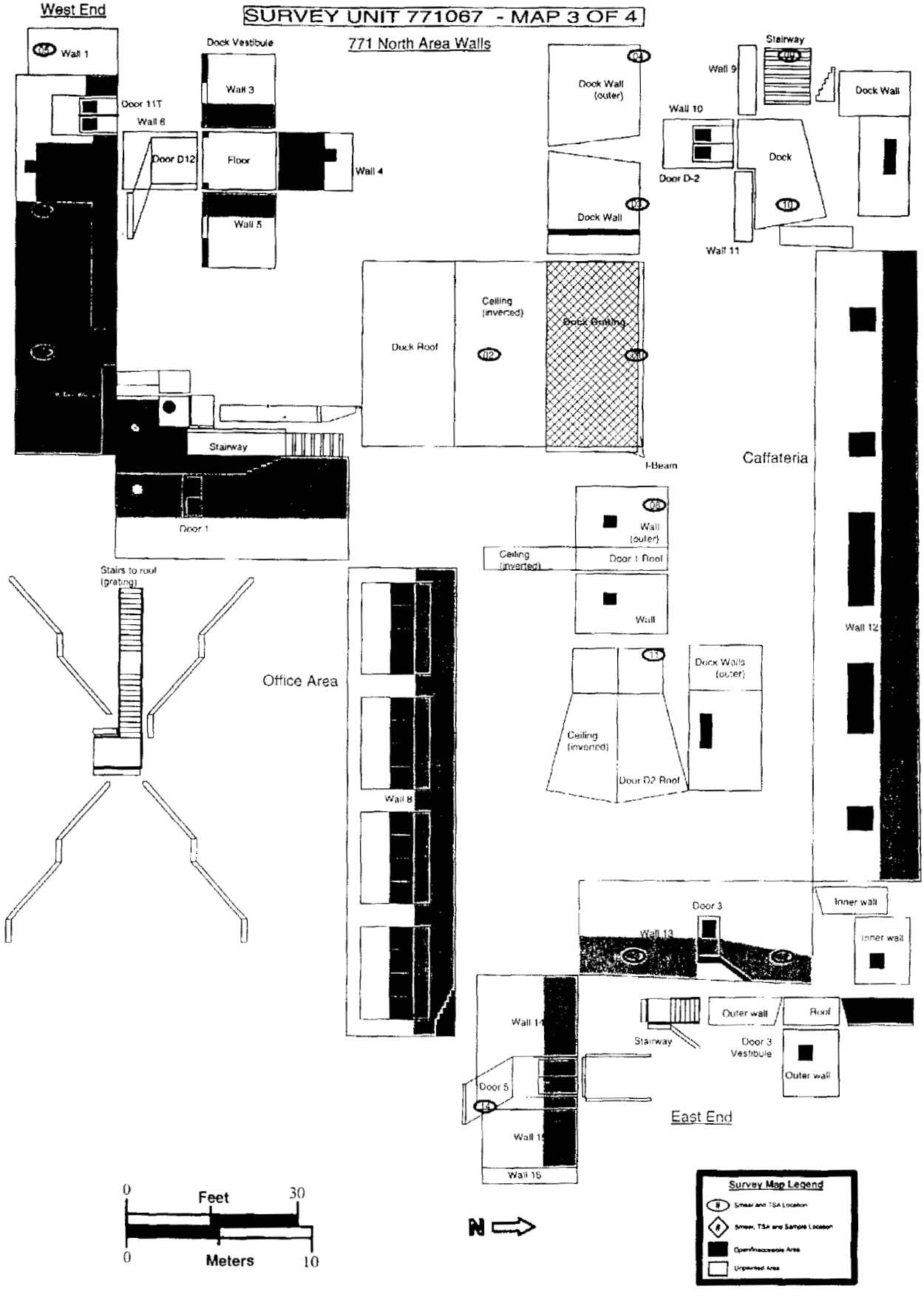
Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
03Z1848-002.001 2	U234	0.0769	0.2090	0.75	26.3	0	0	
39	U235	-0.0158	0.2100			0	0	Uranium
	U238	0.0593	0.1990			0	0	0
	Pu239/240	0.0226	0.1980			0	0	Transuranic
	Am241	0.0000	0.1790			0	0	0
03Z1848-003.001 3	U234	0.9360	0.2390	1.76	26.3	2	1	
41	U235	0.0985	0.1740			0	0	Uranium
	U238	0.7120	0.1740			2	0	4
	Pu239/240	0.3590	0.1880			1	0	Transuranic
	Am241	0.2580	0.1940			1	0	1
03Z1848-004.001 4	U234	0.0865	0.2900	2.37	26.3	0	1	
42	U235	0.0094	0.2350			0	1	Uranium
	U238	0.0784	0.3050			0	1	1
	Pu239/240	-0.0421	0.2070			0	1	Transuranic
	Am241	0.0642	0.1930			0	1	0

Comments: 03Z1848-001.001 was omitted from the data set because this section of the building was removed and sent out as SCO.

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL **Survey Unit: 771067** **Classification: 2**
Building: 771
Survey Unit Description: 771 Exterior

Total Floor Area: NA sq. m **Total Area: 2881 sq. m** **Grid Size: N/A**



RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL **Survey Unit: 771067** **Classification: 2**
Building: 771
Survey Unit Description: 771 Exterior

Total Floor Area: NA sq. m **Total Area: 2881 sq. m** **Grid Size: N/A**

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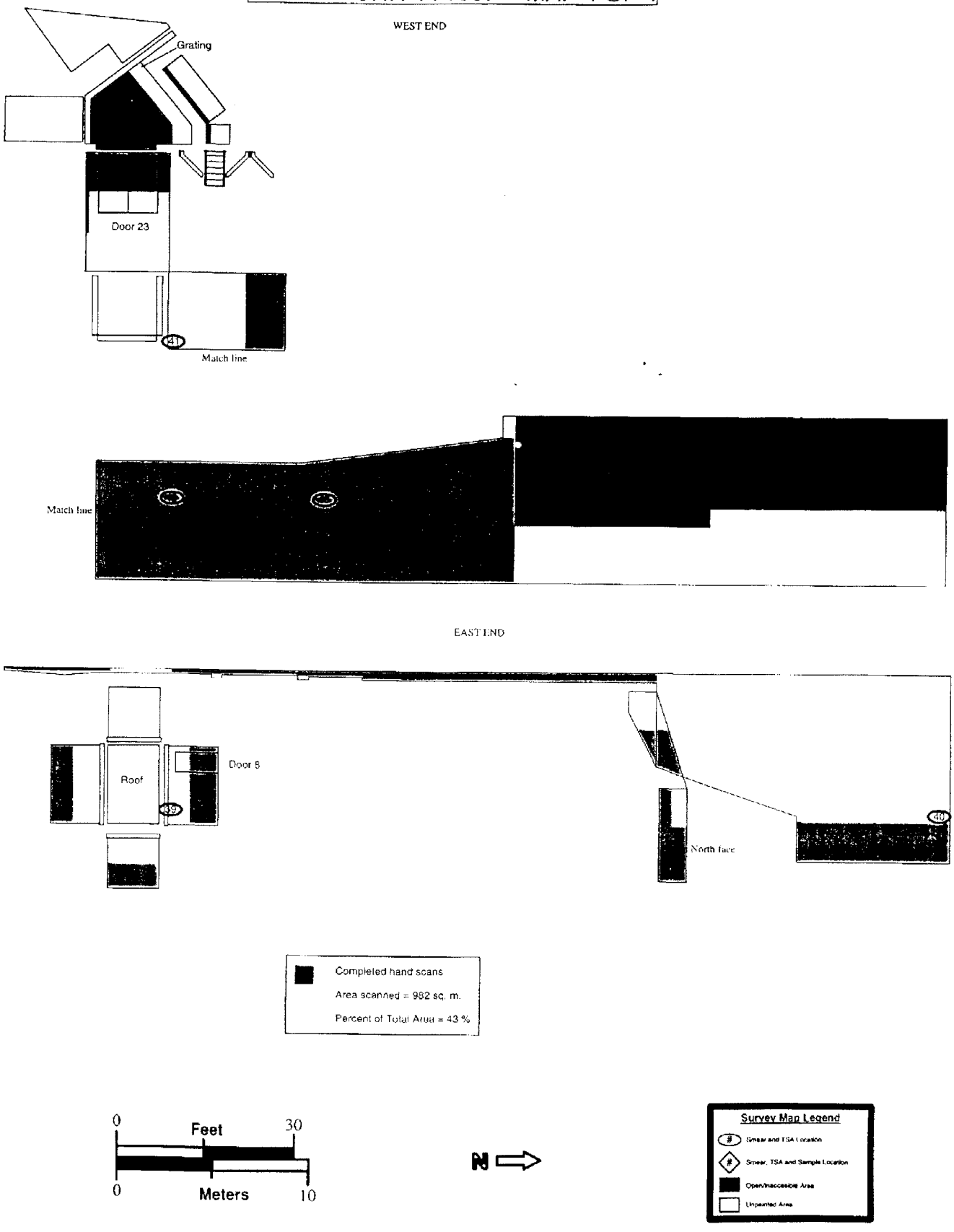
SURVEY UNIT 771067 - MAP 4 OF 4



ATTACHMENT C

Survey Unit 771069
Radiological Data Summary and Survey Map

Survey Area: AL	Survey Unit: 771069	Building: 771
Description: IDEC Exterior		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 15 Number Performed 19 Number QC Performed: 2

Alpha

Maximum:	95.5 dpm/100cm²
Minimum:	<21.6> dpm/100cm²
Mean:	46.7 dpm/100cm²
Standard Deviation:	32.4
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Removable Surface Activity Measurements

Number Required: 15 Number Performed: 19

Alpha

Maximum:	5.7 dpm/100cm²
Minimum:	<1.2> dpm/100cm²
Mean:	2.7 dpm/100cm²
Standard Deviation:	2.0
Transuranic DCGLw:	20.0 dpm/100cm²
Uranium DCGLw:	1,000.0 dpm/100cm²

Media Sample Results

Number Required: 0 Number Samples: 1

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Transuranic

Maximum:	0.0 dpm/100cm²
Minimum:	0.0 dpm/100cm²
Mean:	0.0 dpm/100cm²
Standard Deviation:	0.0
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc	300.0 dpm/100cm²

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Survey Area: AL	Survey Unit: 771069	Building: 771

Description: IDEC Exterior

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	514979	11/15/02	SAC-4	1491	NA	01/23/03	0.333	NA	10.00	NA
2	514979	11/15/02	SAC-4	1201	NA	04/02/03	0.330	NA	10.00	NA
3	514979	11/15/02	SAC-4	1160	NA	05/07/03	0.330	NA	10.00	NA
11	516635	11/13/02	Electra	1367	DP-6	01/08/03	0.222	NA	48.00	NA
12	514979	11/14/02	Electra	1367	DP-6	01/08/03	0.222	NA	48.00	NA
13	514979	11/15/02	Electra	1262	DP-6	05/15/03	0.220	0.333	48.00	NA
14	600931	06/19/03	Electra	2382	DP 6	11/02/03	0.215	0.333	48.00	NA

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Survey Area: AL	Survey Unit: 771069	Building: 771

Description: IDEC Exterior

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771069PRP-N001	3	1.8	N/A			
771069PRP-N002	1	4.2	N/A			
771069PRP-N003	2	2.4	N/A			
771069PRP-N004	3	1.8	N/A			
771069PRP-N005	2	5.5	N/A			
771069PRP-N006	1	4.2	N/A			
771069PRP-N007	2	3.9	N/A			
771069PRP-N008	1	5.7	N/A			
771069PRP-N009	3	1.8	N/A			
771069PRP-N010	2	2.4	N/A			
771069PRP-N011	1	4.2	N/A			
771069PRP-N012	2	-.6	N/A			
771069PRP-N013	3	1.8	N/A			
771069PRP-N014	1	4.2	N/A			
771069PRP-N015	2	.9	N/A			
771069PRP-N016	3	-1.2	N/A			
771069PRP-N017	3	.3	N/A			
771069PRP-N018	1	4.2	N/A			
771069PRP-N019	1	4.2	N/A			

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			

Comments:

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Survey Area: AL	Survey Unit: 771069	Building: 771

Description: IDEC Exterior

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771069PRP-N001	12	95.5	N/A
771069QRP-N001	14	105.4	N/A
771069PRP-N002	12	-21.6	N/A
771069QRP-N002	14	80.7	N/A
771069PRP-N003	12	23.4	N/A
771069PRP-N004	12	62.6	N/A
771069PRP-N005	12	89.7	N/A
771069PRP-N006	12	38.3	N/A
771069PRP-N007	12	20.3	N/A
771069PRP-N008	12	5.4	N/A
771069PRP-N009	12	26.6	N/A
771069PRP-N010	12	-.4	N/A
771069PRP-N011	12	47.3	N/A
771069PRP-N012	11	35.6	N/A
771069PRP-N013	13	60.2	N/A
771069PRP-N014	13	66.1	N/A
771069PRP-N015	13	84.3	N/A
771069PRP-N016	13	69.3	N/A
771069PRP-N017	11	74.3	N/A
771069PRP-N018	11	71.6	N/A
771069PRP-N019	13	38.9	N/A

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)

Comments: 771069PRP-N002 was omitted from the data set because of it's misleading information. This area has elevated readings, these high reading are not due to any DOE controled isotopes but due to Po-210 which is found in galvanized metal. This material was sampled in 7 different places to reinforce this statement.

Survey Area: AL	Survey Unit: 771069	Building: 771

Description: IDEC Exterior

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
03D0189-004.001 4	U234	NA	NA	9.20	26.3	NA	NA	
771 IDEC	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	6.1454			0	74	Transuranic
	Am241	0.0000	0.8680			0	10	0

Comments: Sample 03D0189-004.001 is a batch shot of sample 1 thru 3.

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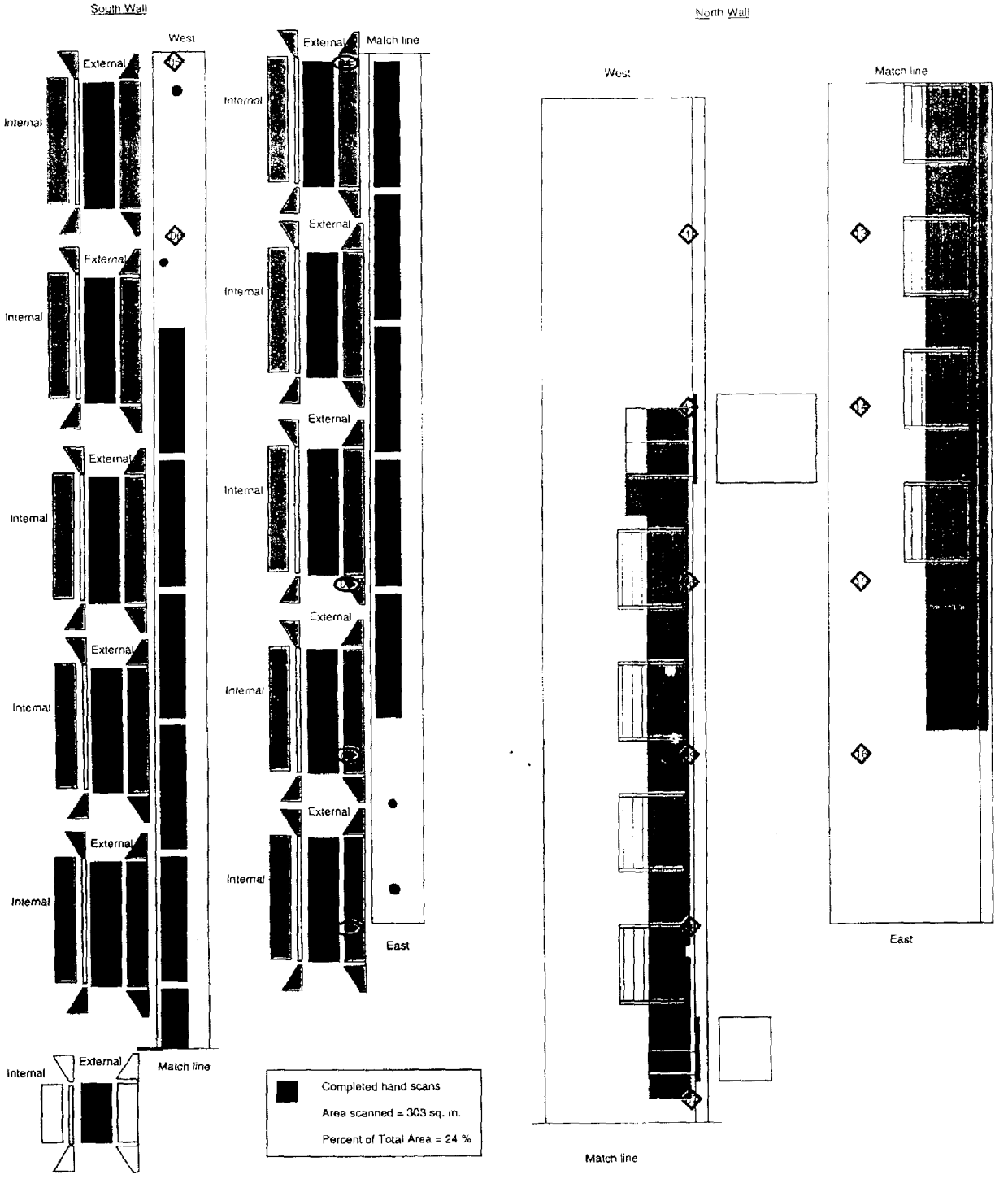
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL **Survey Unit:** 771069 **Classification:** 3
Building: 771
Survey Unit Description: 771 IDEC Exterior

Total Floor Area: NA **Total Area:** 1272 sq. m **Grid Size:** N/A

SURVEY UNIT 771069 - MAP 1 OF 2



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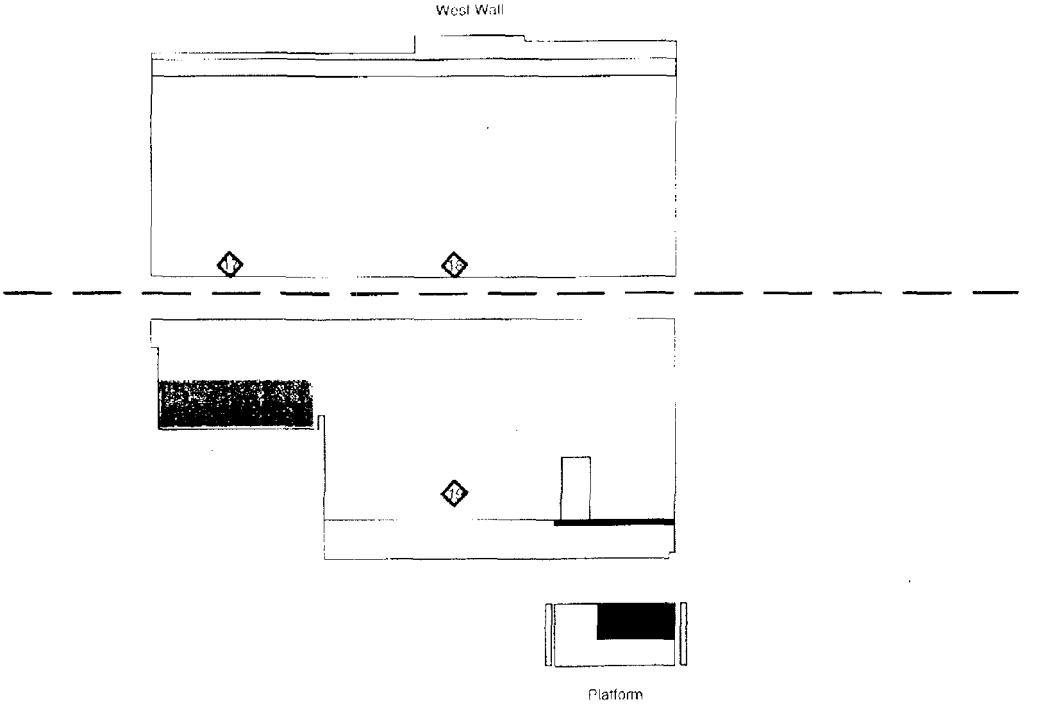
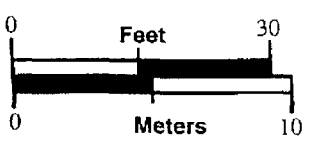
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL **Survey Unit: 771069** **Classification: 3**
Building: 771
Survey Unit Description: 771 IDEC Exterior

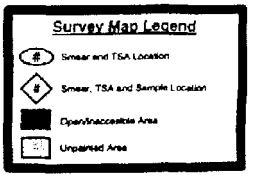
Total Floor Area: NA **Total Area: 1272 sq. m** **Grid Size: N/A**

SURVEY UNIT 771069 - MAP 2 OF 2





N



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ATTACHMENT D

Survey Unit 771071
Radiological Data Summary and Survey Map

Survey Area: AL	Survey Unit: 771071	Building: 774
Description: B774 Exterior		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 0 Number Performed 15 Number QC Performed: 2

Alpha

Maximum:	58.6 dpm/100cm²
Minimum:	9.6 dpm/100cm²
Mean:	31.7 dpm/100cm²
Standard Deviation:	15.3
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Removable Surface Activity Measurements

Number Required: 0 Number Performed: 15

Alpha

Maximum:	1.8 dpm/100cm²
Minimum:	<1.8> dpm/100cm²
Mean:	<0.2> dpm/100cm²
Standard Deviation:	1.0
Transuranic DCGLw:	20.0 dpm/100cm²
Uranium DCGLw:	1,000.0 dpm/100cm²

Media Sample Results

Number Required: 0 *Number Samples: 1*

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Transuranic

Maximum:	0.0 dpm/100cm²
Minimum:	0.0 dpm/100cm²
Mean:	0.0 dpm/100cm²
Standard Deviation:	0.0
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc	300.0 dpm/100cm²

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Survey Area: AL	Survey Unit: 771071	Building: 774

Description: B774 Exterior

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	512326	03/09/04	Electra	390	DP-6	06/02/04	0.216	NA	48.00	NA
2	515011	03/09/04	Electra	2385	DP-6	06/03/04	0.219	NA	48.00	NA
3	512326	03/09/04	SAC-4	1185	NA	04/20/04	0.330	NA	10.00	10.00
4	512326	03/09/04	SAC-4	1053	NA	07/22/04	0.330	NA	10.00	10.00
5	512326	03/09/04	SAC-4	820	NA	06/08/04	0.330	NA	10.00	10.00
6	512326	03/09/04	SAC-4	815	NA	05/14/04	0.330	NA	10.00	10.00
7	513185	03/29/04	Electra	1367	DP-6	06/17/04	0.220	NA	48.00	NA
8	514510	03/29/04	SAC-4	815	NA	08/09/04	0.330	NA	10.00	10.00

165

Survey Area: AL	Survey Unit: 771071	Building: 774

Description: B774 Exterior

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771071PRP-N001	3	.3	N/A
771071PRP-N002	8	.9	N/A
771071PRP-N003	4	-1.2	N/A
771071PRP-N004	5	-.3	N/A
771071PRP-N005	6	-1.8	N/A
771071PRP-N006	3	.3	N/A
771071PRP-N007	8	-.6	N/A
771071PRP-N008	4	1.8	N/A
771071PRP-N009	5	-.3	N/A
771071PRP-N010	6	-.3	N/A
771071PRP-N011	3	.3	N/A
771071PRP-N012	4	.3	N/A
771071PRP-N013	5	-1.8	N/A
771071PRP-N014	6	-.3	N/A
771071PRP-N015	3	.3	N/A

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)

Comments:

166

Survey Area: AL	Survey Unit: 771071	Building: 774
Description: B774 Exterior		

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)
771071PRP-N001	2	18.8	N/A
771071QRP-N001	2	70.5	N/A
771071QRP-N002	1	22.3	N/A
771071PRP-N002	7	42.7	N/A
771071PRP-N003	2	22.0	N/A
771071PRP-N004	2	22.0	N/A
771071PRP-N005	2	40.3	N/A
771071PRP-N006	2	58.5	N/A
771071PRP-N007	7	9.6	N/A
771071PRP-N008	1	28.6	N/A
771071PRP-N009	1	25.3	N/A
771071PRP-N010	1	47.1	N/A
771071PRP-N011	2	22.0	N/A
771071PRP-N012	2	12.9	N/A
771071PRP-N013	1	25.3	N/A
771071PRP-N014	1	56.4	N/A
771071PRP-N015	1	43.9	N/A

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)

Comments:

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Survey Area: AL	Survey Unit: 771071	Building: 774

Description: B774 Exterior

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in²)	Sample Nuclide (dpm/100cm²)	Sample Nuclide MDA (dpm/100cm²)	Sample Total (dpm/100cm²)
03D01191-004.00' 1	U234	NA	NA	19.60	26.3	NA	NA	
Exterior of 774	U235	NA	NA			NA	NA	Uranium
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0000	4.7436			0	122	Transuranic
	Am241	0.0000	0.6700			0	17	0

Comments: The three samples taken for the exterior of this survey package was sent off as a batch sample.

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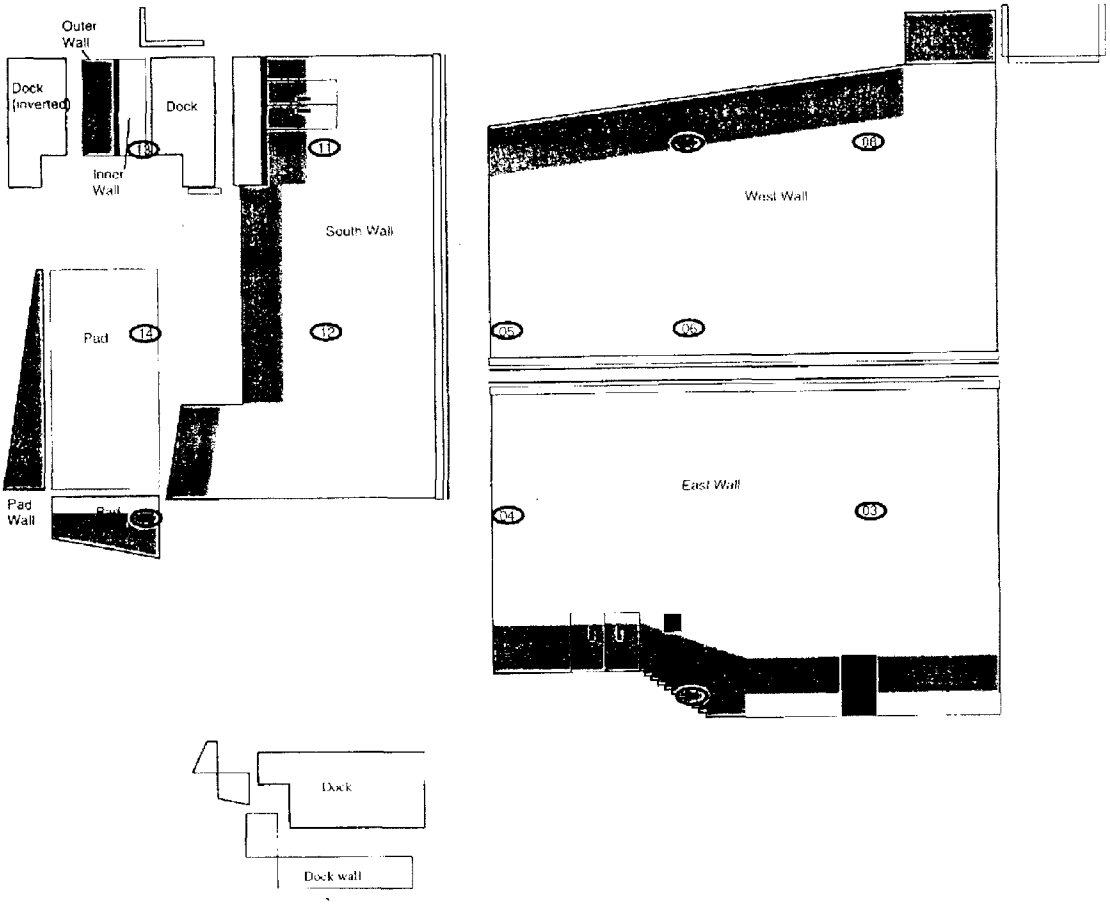
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL **Survey Unit: 771071** **Classification: 2**
Building: 774
Survey Unit Description: 774 Exterior

Total Floor Area: N/A **Total Area: 909 sq. m** **Grid Size: 7m x 7m**

SURVEY UNIT 771071 - MAP 1 OF 1



ATTACHMENT E

Data Quality Assessment

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed; the radiological survey assessment is provided in Table E-1, and beryllium in E-2. A data completeness summary for all results is given in Table E-3.

All relevant Quality records supporting this report are maintained in the B771/774 Exterior Characterization Project Files. This report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2).

SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable uncertainties.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels, except as noted above. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been implemented to prevent the inadvertent introduction of further contamination into the facility. On this basis, the B771/774 Exterior meets the RLCP and PDSP DQO criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – B771/774 Exterior

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	initial calibrations	80%<x<120%	≥1	Calibration using Alpha Group procedure and approved technicians.
	daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected Ranges <10 Cpm
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥100% packages	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 771071/771067/771069	statistical	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ $DCGL_w$ per MARSSIM guidelines.

Table E-3 Data Completeness Summary – B771/774 Exterior

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area: AL Survey Unit: 771067 B771/774 Exterior	43 α TSA (43 – Random/Systematic) and 43 α Smears (43 - Random/Systematic) 2 QC TSA 4 Media 43% exterior scanned	43 α TSA (43 – Random/Systematic) and 43 α Smears (43 - Random/Systematic) 2 QC TSA 4 Media 43% exterior scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample numbers: 03Z1848-001.001 Thru 03Z1848-004.001 No results above action level
Radiological	Survey Area: AM Survey Unit: 771071 B771/774 Exterior	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 3 Media 17% Scanned	15 α RSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 3 Media 17% Scanned	No elevated contamination at any location from DOE added isotope; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample number 03D01191-004.001 No results above action level

Table E-3 Data Completeness Summary – B771/774 Exterior

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area: AL Survey Unit: 771069 B771 IDEC Exterior	19 α TSA (19 – Random/Systematic) and 19 α Smears (19 - Random/Systematic) 2 QC TSA 3 Media 22% Scanned	19 α RSA (19 – Random/Systematic) and 19 α Smears (19 – Random/Systematic) 2 QC TSA 3 Media 22% Scanned	No elevated contamination at any location from DOE added isotope; all values below PDS unrestricted release levels No results above action level	Transuranic DCGLs RIN Sample number 03D0189-004.001 No results above action level

ATTACHMENT F

Historical Review

Building 771/774 Exterior
Historical Review
March 31, 2004

Facility ID: Buildings 771/774, Exterior (Survey Area AL)

Anticipated Facility Type (1, 2, or 3): Type 3. Based on low contamination potential, the exterior of B771/B774 is classified as a Class 3 survey unit.

Physical Description: The exterior of the 771 Building encompasses approximately 2881m^2. The primary material used in its construction is bare poured concrete with intermittent use of painted metal siding. The exterior of the 774 complex at 2087m^2 is the second largest unit in this report and its construction consists of bare poured concrete. The IDEC section of the 771 exterior contains an area of 1272m^2 and is primarily made of painted metal siding over a steel beam skeleton.

Historical Operations:
This survey unit consists of structural surfaces only. No processes occurred on the exterior of B771/B774. The most likely sources of contamination of this area include the 1957 Building 771 fire, the 1969 Building 776 fire, and other miscellaneous airborne emission sources from the site. However, environmental sampling performed to date indicates that the fires did not spread detectable contamination into the surrounding soils. Therefore, contamination would not be expected on structural exteriors.

Current Operational Status: B771 and B774 are no longer in operation.

Contaminants of Concern

Asbestos
None

Beryllium (Be)
The roofs of B771/B774 are not RFETS Beryllium (Be) Areas, based on historical and existing classifications, and historical use. Personnel interviews confirm that this area was never a Beryllium area.

Lead

None

RCRA/CERCLA Constituents
Personnel interviews indicate that RCRA storage units were never located in this area.

A visual inspection of the 771/774 exterior 771/774 Environmental Compliance/Industrial Hygiene personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling. As a result of these observances, it has been determined that no additional sampling for RCRA/CERCLA constituents is required.

PCBs
Free-flowing or exposed PCBs have never been used or transferred on the exterior of 771or 774.

Radiological Contaminants
The contaminants of concern for the 771 project, including all areas of Buildings 771 and 774, are transuranic alpha-emitting radioisotopes (including Pu-238, Pu-239/240, Pu-242, and Am-241). Based on findings documented in Radiological Engineering TBD-00161, Rev. 0, alpha-only surveys assure that the unrestricted-release limits for any other isotopes that may exist in Building 771/774 will not be exceeded.

Environmental Restoration Concerns
No Individual Hazardous Substance Sites (IHSS) exist on the B771/B774 exterior surfaces.

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Building 771/774 Exterior
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Additional Information
None

References
(1) *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.
(2) *Building 771/774 Cluster Closure Project Reconnaissance Level Characterization Report*, dated August 8, 1998, Revision 2.

Further Actions
Complete the PDS process.

Prepared By: T. Fontaine / [signature] / 3-31-04
Name Signature Date

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